

Computer Weekly

Thursday, June 3, 1982

Wang joins the long march into micro market

by Robert Parry
WANG has joined the relentless march of mini and mainframe makers into the micro market. Like the IBM Personal Computer - which legitimised the micro for computing's big boys - and recent products from DEC and Burroughs, Wang's new Professional Computer uses the Intel 16-bit family. It runs the MS-DOS operating system, written for IBM by Microsoft, on an 8086 chip with 128K memory expandable to 256K. It offers floppy or hard discs and will also have a CPM emulation option to run 8-bit application software. But Wang is looking to more than just standalone computers for businessmen's desks. Its new machine will plug into its existing office automation products to act as a workstation for 2200 and Virtual Storage mini systems, and for



OLISA... "8-bit CPM compatibility is a stopgap."

Office Information System and Alliance shared logic word processing systems. The Professional Computer will not be available before the end of this year in the UK, says marketing manager Ken Olisa. When it does come it will sell for about £2,000 in its most basic form, but a more realistic system for DP professionals will sell at about £6,500. For this the user will get 256K RAM and five megabytes of Winchester disc, a monochrome graphics display, and software including MS-DOS, a Wang word processing package and the Multiplan financial spreadsheet package. Plug-in boards for CPM emulation and connection into the other office automation systems will come later still. The provision of 8-bit CPM compatibility is seen by Olisa as a stopgap measure to some extent. Shortage of 16-bit application software is still a limit to user acceptance, though the growing numbers of machines launched are fuelling software activity. It will also provide a growth path for current Wang users - CPM runs on the Wangwriter word processing system. Wang is up against strong competition for the high performance micro market. The IBM Personal Computer sells through unofficial importers for only £3,000. The ACT Sirius I, similarly an 8088-based machine, costs about £2,400, which is where the DEC Rainbow personal computer sits in. DEC's other new micros, the Professional 325 and 350, will sell for between £2,500 and £3,300. Olisa expects the Wang to be sold through third party distributors for between £2,500 and £3,000 as a standalone machine.



Braniff 'victim of sabotage' claim

by Howard Karten
THE US Department of Justice is investigating charges that manipulation of computerised reservation systems may have played a part in the recent collapse of Braniff International Airlines. The Texas-based carrier, which in recent months has been in financial trouble, last week filed for bankruptcy. The DOJ investigations follow a separate Federal Grand Jury investigation of charges made by Braniff. Braniff used two separate airline reservation systems - one run on its own computers, and another which it obtained from American Airlines. Sam Coates, senior vice-president for Braniff, last week charged that American had carried out a "highly professional sabotage" effort against Braniff. Among the charges are that American Airlines, via its Sabre reservations system, failed to display some schedules for Braniff flights on visual display terminals used by travel agents, in booking flights; that American deliberately changed some reservations from Braniff flights to those on American; and that American may have engaged in other unsavoury activities. Coates has declined to elaborate on the charges, while American has denied them. Several major US airlines run their own reservation systems, and in addition serve as "hosts", selling the service to smaller airlines. In addition, many such systems are tied together for inter-airline message traffic via a Maryland company called Arinc. Many airlines use as a core system a reservation package sold by IBM. This type of rough and tumble, which sometimes verges on illegal activities, is not unknown in American business. But the charges made by Braniff remain to be proven.

Users don't like Sitpro change proposals

by Donald Kennett
CONFUSION has been growing over a proposed standard for the exchange of data between organisations that most data processing departments haven't even heard about. The proposal, called Dial (data interchange at the application level), is being developed by the OIS-14 committee of the British Standards Institution. It is based almost entirely on the work done by Sitpro, the quango set up to simplify international trade procedures, which resulted in a published specification in 1978 and a software package to support it 18 months ago. But the "almost" is where the problem arises. Users of the Sitpro system would naturally be reluctant to make unnecessary changes to their implementations and

Wealth of comms for Decnet

by Donald Kennett
SUPPORT for Ethernet and gateways to IBM's SNA network architecture are included in the rash of communications products Digital Equipment has said it will introduce over the next three years. Phase IV of Decnet is designed to give DEC users the widest selection of communications protocols in the industry. The company already supports the X25 international packet switching standard and its own DDCMP digital data communications message protocol. The first products in the programme are the £185 H4000 Ethernet transceiver and the cables for the network. They are to be available by the end of the year. Users will have until the middle of next year to install their networks before the first DEC network attachments arrive. Gateways to SNA and other networks and between Decnets will be based on a small PDP-11 with software to provide network management facilities. It will also support interactive 3270-computer links. A joint statement from Sitpro and the British Standards Institution says that the cores of both systems are identical and differences in the extensions can be overcome either by implementing additional functions to control the choices or by avoiding the use of some of the options.

Deliveries profit NEC, Fujitsu

by Kevin Cahill
TWO of Japan's key computer companies, Nippon Electric and Fujitsu, have recently revealed big profit increases for the year ended March 31, 1982. Deliveries of completed computer systems accounted for much of the improved profits, according to both companies. Fujitsu pushed its pre-tax profit up by 54%, to £118 million on turnover of £1.58 billion. According to the company, 66.8% of the profit contribution came from the sale of computers, which rose by 17.4%. Overseas sales of all Fujitsu products rose by 84.2%, and much of the good profit performance comes from sales to Siemens of West Germany and Amdahl in the United States.

Plessey has plenty of cash

by Kevin Cahill
VERY much in line with the latest predictions from stockbroking analysts, Plessey pushed profits up 32% through the £100 million barrier to close the year at £111 million. Turnover rose to £963 million but the figure which attracted most attention was the cash balance of £237 million. Last year Plessey had around £62 million in short-term cash, about in line with the needs of a company of its size. Constant speculation has centred on the idea of a bid for Ferranti, when 50% of that company's shares are released from the covenant restricting their sale in August. But Plessey's chairman, Sir John Clark, refused to be drawn on the subject.

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Olivetti to 'increase Logabax workforce

by Jack Gee
OLIVETTI France has issued a strong denial that it plans to dismantle or reduce staff at Logabax, the French printer manufacturer in which the Italian firm holds a 65% controlling interest. It promises ambitious plans to make it a developing and profitable venture. The denial answered allegations by French trade unions that Olivetti intends to take control of Logabax's commercial, after-sales and export operations. This, they claim, would mean a reduction in staff to 500 from the present of 1,000, the unions said. Olivetti France replied that it plans to raise it to 1,400 by 1985 and has submitted plans to achieve this objective in a document drafted for the Ministry of Industry's department for data processing and electronics. One year ago Logabax announced that it was going into liquidation, but it was then bought out by the government. The operation continued trading as usual. The optimism of Olivetti France is based on the renewal of the Logabax product range, which is regarded as being at the end of its tether. Olivetti says it intends to enter Logabax with development of a 32-bit microcomputer and a line printer, designed for connection to France's Minitel electronic telephone directory terminal. Other future products include a microcomputer, of which 100,000 units a year are planned. These will be designed for the mass market with special emphasis on educational applications. The French Ministry of Industry's answer to Olivetti proposals expected before the summer. Olivetti also plans to hand over Logabax the manufacture of Italian designed products. In the framework of this expansion drive Logabax's research and development teams will be expanded from their present total of 80 to 110. Olivetti said these ventures should enable Logabax to balance its books this year, after making a loss of FF100 million (£10 million) in the early months of 1981, before the Italian firm became the dominant partner. Thanks to an immediate revival under Italian management, Logabax finished last year with a loss of only FF4 million (£800,000).

Back in profit for the second quarter

ICL on course for survival

by Kevin Pearson
ICL's survival plan is on course. The UK's largest computer manufacturer at last returned to profitability in the second quarter of its present financial year, and chairman Christopher Laidlaw repeated previous assertions that the company will show a profit for the full year. The denial answered allegations by French trade unions that Olivetti intends to take control of Logabax's commercial, after-sales and export operations. This, they claim, would mean a reduction in staff to 500 from the present of 1,000, the unions said. Olivetti France replied that it plans to raise it to 1,400 by 1985 and has submitted plans to achieve this objective in a document drafted for the Ministry of Industry's department for data processing and electronics. One year ago Logabax announced that it was going into liquidation, but it was then bought out by the government. The operation continued trading as usual. The optimism of Olivetti France is based on the renewal of the Logabax product range, which is regarded as being at the end of its tether. Olivetti says it intends to enter Logabax with development of a 32-bit microcomputer and a line printer, designed for connection to France's Minitel electronic telephone directory terminal. Other future products include a microcomputer, of which 100,000 units a year are planned. These will be designed for the mass market with special emphasis on educational applications. The French Ministry of Industry's answer to Olivetti proposals expected before the summer. Olivetti also plans to hand over Logabax the manufacture of Italian designed products. In the framework of this expansion drive Logabax's research and development teams will be expanded from their present total of 80 to 110. Olivetti said these ventures should enable Logabax to balance its books this year, after making a loss of FF100 million (£10 million) in the early months of 1981, before the Italian firm became the dominant partner. Thanks to an immediate revival under Italian management, Logabax finished last year with a loss of only FF4 million (£800,000).



LAIDLAW (right) ... "Company will show a profit for full year." With him is managing director Robb Wilmot.

UK firm's breakthrough into Fifth Generation

by Claire Gooding
A TINY new British company is taking a short cut past current Artificial Intelligence techniques to generate programs straight from logic. The theory could mean a breakthrough for Fifth Generation machines. Computer Research Systems, known as Cores, is using a theory based on "Natural Logic" called Multiple Objective Boolean System Mobs. According to Cores, Mobs can communicate directly in natural human logic, without using either symbolic programming languages or the "Natural Language" techniques which have absorbed so much AI effort in the past. The formulator of the theory is Dr Faridun Hilmi, who developed the Natural Logic technique during a long academic career at Cardiff and City Universities. "It's not easy to explain as really there is no comparison with anything that's already available" said Hilmi. "To all intents and purposes it's an AI processor. You can structure models without programming them, to as many different levels of relationship that are needed." Mobs works by building a model or logical network, with relationships indicated by pointers. This network is expandable, allowing new structures to be added and "learning" about its environment as the knowledge base is increased. The structure is "filled" with the basic items of the formula or application, and the system is then generated with a single command: "Like a very, very, high level language" said Hilmi. A commercial product, called Prelude, has already been developed from Mobs, primarily for business applications. It is being sold on a bureau basis or as a complete system for software houses wishing to make use of systems generation, for £20,000. However Hilmi sees Mobs as having further significance in the areas of Artificial Intelligence, digital and analogue system design, and robotics. He is hanging on to the results of his years of research because he feels that it will solve one of the most pressing problems of the Fifth Generation systems. "Mobs deals with fundamentals and basics of logic - it explains the function of thinking, not language. This is the key to the Fifth Generation."

NEWS BRIEF

'Uncontrolled' introduction of technology

A REPORT released today (Thursday) by white collar union APEX says the introduction of new technology is happening on a large scale in an "uncontrolled fashion". The report is based on a survey last year of 30,000 APEX members in London and the Home Counties.

Cellular service

AMERICAN Telephone & Telegraph has applied for official approval to set up cellular radio manufacturing and service companies with a total of \$26 million assets and a budget of \$28 million next year. Mobile telecommunications services based on the cellular technique would be set up in 35 major cities within five years.

First-time finance

THE Computer Weekly/Barclays Bank conference for computer entrepreneurs seeking first time finance, opens next Thursday (June 17). Speakers will include senior figures from Barclays, finance institutions and computer companies. The conference will be at the Kensington Close Hotel in London, and there is still time to book places. Details from Sue Bonnell, IPC Conferences, on 01-643 8040 or clip coupon, page 10.

Union fights

POST Office Engineering Union has three important fights on its hands, general secretary Bryan Stanley said at the union's national conference at Blackpool this week. It must fight British Telecom management's new aggressive attitude in negotiations, the government's efforts to increase competition and private ownership in telecommunications, and stagnation in the union's own structure.

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IBM gives a preview of System 36
by Boris Sedacca
WITH the threat of anti-trust action behind it, IBM has resumed the practice of pre-announcing products before launching them on the market. Last week IBM pre-announced System 36, a small business computer which will bridge the gap between System 34 and the advanced architecture System 38. A select group of data processing managers in the US who are large-scale users of System 34 - running about 50 machines each in their organisations - were given the preview. The machine is expected to be delivered in September. Mike Newman, managing director of Interactive Database Systems, which specialises in System 38 software development, believes the price will start at £45,000 and extend to over £100,000. The machine will have one Mbyte of memory, a 200 nanosecond processor compared with 600 nanoseconds on the System 34, 768 Mbytes of disc storage (roughly three times that of System 34), and increased channel width of four bytes against two bytes on System 34. The operating system will be fully compatible with that on System 34. System software elements from System 38 such as database management and the new RPGIII language will not be offered, although multiple indexing on index files and RPGIII-type commands will be available. According to IBM, future operating system releases will incorporate more System 38 functions.

Micros in the surgery row
A DEPARTMENT of Industry scheme was announced this week which involves 150 micros for general practitioners and 20 micros and two minis for Family Practitioner Committees. The DoI will subsidise installation and maintenance by up to £2½ million. But only two of the dozen companies in the market have been chosen by the DoI - CAP and Basingstoke-based British Medical Data Systems. Each will supply 75 British built systems to GPs, with first installations in September. Tim Benson, chairman of the General Practice Computer Suppliers Association, sees it as a bad scheme. "It's grossly unfair, some companies will undoubtedly drop out and it will freeze development."

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INSIDE THIS WEEK'S ISSUE
Apple clamp-down on retail outlets... 3
Hitachi into UK micro market... 4
France holds up US kit for Russia... 5
New thinking for programmers... 17
Software Month on DEC systems... 21/23
Disc firm 'not for sale'... 3
NCC technology exchange... 5
More US lay-offs... 6
Micro News... 8
Company News... 10/11
Software File... 12
On Spot... 13
Systems Thoughts... 14
Focus on job burn-out... 14
Downtime by Chad... 14
Letters... 15
Programmers Page... 17
Puzzler... 17
People/Directory... 18
Computastart... 19
Products... 20
Markets... 24/26
Sales Bit... 46
Jobs: Pages 27/47

Summit call for united action on technology

by Jack Gee
LEADERS of the world's major industrial nations joined in a call for international action to exploit data processing and other advanced technologies for their own benefit and that of the Third World.

The main appeal came from French President Francois Mitterrand, host at the seven-nation Western Economic Summit held at Versailles last weekend.

Mitterrand urged the government leaders to set global goals for expenditure on research. He named artificial intelligence, tele-

communications and robots as priorities for heavy investment.

The French President also called for greater emphasis on training, and co-operative programmes to introduce computers in schools.

All participants at the summit endorsed Mitterrand's proposals and agreed to set up a working committee with specific proposals for the next Economic Summit to be held in the US in 1983.

But Prime Minister Margaret Thatcher and President Reagan showed coolness towards the heavy role assigned by Mitterrand to

State planning and financial support.

Reagan recalled a study ordered by President Roosevelt in the 1930s with the task of looking ahead a quarter of a century.

Displaying ballpoint pen to his fellow leaders, Reagan said: "The study failed to predict television, plastics, jet planes, organ transplants and even such a common item as a ballpoint pen."

Thatcher emphasised that countries with the lowest rate of inflation also have the lowest rate of unemployment and make the highest use of new technology.

MITTERRAND... "Invest in artificial intelligence, and robots".

'Blackening' threat to bureau

by Boris Sedacca
THE Association of Scientific, Technical and Managerial Staffs has threatened to black customer installations of Electronic Data Processing.

ASTMS is in dispute with the small Sheffield-based bureau which employs 45 people. Twenty unionised staff members are picketing for the reinstatement of a colleague, Jenny Wright, following her sacking.

Management claims that her job as technical author was made redundant, but ASTMS claims she was victimised for organising union activities within the company. ASTMS produced as evidence a work schedule taking her to the end of the year.

As well as its bureau operation, EDP is a dealer for the Ultimate range of minicomputers.

"If we do not come to an understanding with the company on this



WRIGHT... Given her cards.

US merger creates software giant

by Andrew Thomas
US-BASED Computer Associates is to merge with the Capex Corporation of Phoenix, Arizona, which it says will make it the third largest independent software company in the world.

CA will acquire all the outstanding shares of Capex in exchange for 1,200,000 of its own shares. At current prices, the purchase price is equivalent to \$22.5 million.

Both companies are involved in the development and marketing of systems software for IBM and plug-compatible mainframes, principally in the area of performance and productivity enhancement.

According to UK managing director Harry Gordon, the merger brings together CA's DOS expertise and Capex OS products. DOS is IBM's 4300 operating system, while OS is used on the larger machines.

"We'll be offering much more to the OS customer," said Gordon, "not just new products, but more expertise and stronger support."

Gordon claims that the merger makes CA the third largest independent software company in the world, and that new sales staff are being recruited to handle the expanded product line. Also on the cards is an expansion into other machine architectures.

"I can see us getting into other manufacturers in Europe within a year," starting with Univac and DEC," said Gordon.

CA announced record results in May. Net profit for the year ended March 31 showed an increase of 97% to \$2.4 million on revenues of \$28.4 million. In the last quarter, profits were 114% up on the same period in 1981.

Receiver at hand-held data capture company

by Robert Parry
BRISTOL-BASED Image Data Products, manufacturer of the Data Tablet handprint input device, has gone into receivership. It is closing in the face of possible multi-million dollar orders from the US.

The staff of 18 was made redundant, but managing director Jimmy James is looking for new backing for the company to carry on.

Image Data's backers, the Throgmorton Investment Trust, Scottish Northern Trust and the Edinburgh Trust, called in the receiver when James was in the US exploring orders for the device.

The product has been a slow mover since it was launched two-and-a-half years ago, but James is convinced it will make its impact. Two-thirds of the company's output was going to export orders, which will not now be met.

"It's bizarre really," James says. "I paid for the US trip myself and identified a \$30 million market, with \$6 million of orders from just one company."

The US is still the main market for the tablet, which recognises written characters by identifying changes in magnetic flux caused by the action of writing with a special pen. Its impact there has caused a rival US product, from Pencept, to be withdrawn from the market to be redesigned - with an extra investment of \$2½ million, he adds ruefully.

To get the company up and running again, James says holding on to the Image Data team is imperative.

He is convinced he will find the backing the company needs to get going again, and is looking outside the UK as well as nearer home to find it.



JAMES... "It's bizarre".

BT orders 39 HiNets

by David Kennett
BRITISH TELECOM has ordered 39 HiNet local area networks, costing £527,000, from Extel for use in repair centres and telephone area offices.

HiNets are networks made by Digital Microsystems, support only 32 user stations communicating at up to 9,600 bits per second, in contrast with much faster data rates and capacities at the more glamorous but more controversial end of the local area network business.

But BT says the capacity is sufficient for the number of workstations it wants to have sharing the same data.

The order includes 279 user stations - an average of seven per network - and the Winchester disc-based storage capacity in the network controllers ranges from 22 to 63 Mbytes.

The networks, 20 of which are to be installed in the London area, will enable engineers to access fault details and cost information held on disc.

Apple TV campaign

PERSONAL computing is a small screen again this week as the UK's first television advertising campaign for microcomputers is launched.

Apple is featuring during a break in News at Ten all day on Thames and Central TV, boost sales of Apple II and IIx.

Apple is no stranger to media advertising in the US, where it has coined "IBM's Personal Computer on TV" last year.

First in UK

SUN Life Assurance of Britain's Xerox's first UK customer for a Ethernet local area network. It is £92,000 order for a word processing application includes Xerox 860 information processor, two hard disc based file servers and four printers with network paper feeders.

Users' association

USERS of Honeywell's DE systems have formed a British Management Systems Users Association, as a joint enterprise with Honeywell Control Systems commercial division. Representatives from industry, banking and finance, British Telecom, Department of Health, transport and universities discussed proposals for the association, intended to provide shared objectives and back for Honeywell and its 100 UK users.

Digital study

PACTEL has won a contract from British Telecom International for study designed to identify the requirements of likely customers for future international digital communications services based on the Satstream, Megastream and Kistream satellite and leased line digital services currently being promoted in the UK.

Chinese software

HONG KONG's main distributor for the Japanese Sord microcomputer, Wing Group, has developed software to turn the Sord into a wordprocessing terminal capable of displaying Chinese characters and of acting as a frame store of automatic display system. It is selling the software for US\$50.

Videotex show

A STORY on Page 2 of our May 13 issue referred to the Videotex 82 exhibition and conference in London. The proper name for the show was Videotex Systems 82. More details from: IPC Exhibitions Ltd, Surrey House, Throby Way, Sutton, Surrey SM1 4QQ. Telephone 01-881 8040.



ARMSTRONG... "No sense in losing control".

UK disc firm is 'not for sale' says DRI

by Kevin Cahill
THE future of United Peripherals Ltd, the British Technology Group subsidiary, lies firmly in UK hands.

Control Data Corporation's bid for ownership of Winsford-based UPL died last August, according to DRI group managing director John Armstrong.

Armstrong also revealed that United Peripherals was in full production and would report turnover of £42 million for this financial year.

Admitting that the start-up costs at UPL had been substantially higher than anticipated, Armstrong said the company was financially not for sale.

Armstrong, who heads the British Technology Group-owned Data Recording Instruments group, which in turn has 76% shareholding in United Peripherals, said that UPL was now the main supplier to the DRI operating subsidiaries.

"There is no commercial sense in losing control of an operation in which so much has been invested," Armstrong continued. He also claimed that all four operating subsidiaries of DRI were now profitable, before interest charges.

However, those interest charges could be high. The accounts of the British Technology Group in its earlier incarnation as the National Enterprise Board show start-up losses of £20 million for 1979/80 and 1980/81 at United Peripherals.

Armstrong clarified the losses by revealing that a huge write-off of Diablo stock held by Data Recording Equipment had been included in the figures.

Based on a purchase price of £6.9 million to ICL for the 27-acre Winsford site, and £5 million in actual start-up costs, those stock write-offs could have been as high as £8 million.

The £5 million figure for start-up costs is based on Control Data sources in the US.

Armstrong appears to have been successful in persuading the British Technology Group to hang on to its investment despite the loss.

Micro Focus extends its software thrust into Europe

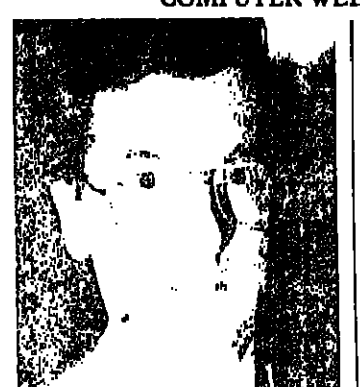
by Maggie McLening
EXPORT award-winning software house Micro Focus is to extend its marketing attack into Europe to coincide with the increasing use of 16-bit microcomputers.

An agreement has been signed with Vector International of Belgium to market Micro Focus system software products alongside those of Digital Research. They will be sold with Data Recording Instruments hardware to provide "one-stop shopping" for users. This type of linked distribution is seen as a definite trend by Stewart Lang, UK managing director of Micro Focus.

"The world software distribution market is coming into shape and we seem to be one of the keys in it - another part of the jig-saw puzzle," he said.

Since 1980 Vector International has been the exclusive European distributor for US-based Digital Research CP/M products, together with its Pascal/MT+, CBasic, CB-80 and PL/I. Vector has set a target for 1982 turnover of £2½ million, over half of which will come from software sales.

"We calculate that this deal will produce sales of Cobol products worth over £1 million during the next two years," said Lang. "Having just returned from a very successful time at the Hannover



LANG... "World software distribution market is coming into shape".

Fair we are confident about the success of this new export drive. Micro Focus has already launched export campaigns in the US and Japan.

Micro Focus will continue to sell CISC Cobol independently in the CP/M market, but only to manufacturers and larger end users.

£3 billion will buy 80,000 jobs

by Jack Gee
NEW jobs for 80,000 people could be created in France's computer components and electronics industry if the government gives the go-ahead to a £3 billion emergency finance package.

The package would encourage investment by the major companies nationalised at the beginning of this year, according to Industry Minister Pierre Dreyfus.

The companies affected include computer maker CII-Honeywell Bull, Thomson-Brand and Compagie Generale d'Electricite.

Dreyfus wants nine billion francs (about £900m) in addition to funds already included in the 1982 budget. Total requirements for the next two years will be 30 billion francs (£3 billion).

The Minister said: "France can hope to rank among the leading electronics manufacturers in the world, obtain a favourable trade balance and create 80,000 jobs."

Dreyfus said government support would be withdrawn from companies in electronics and other industries which operate in an unprofitable and uncompetitive manner.

Apple looks set to clamp down on retailers

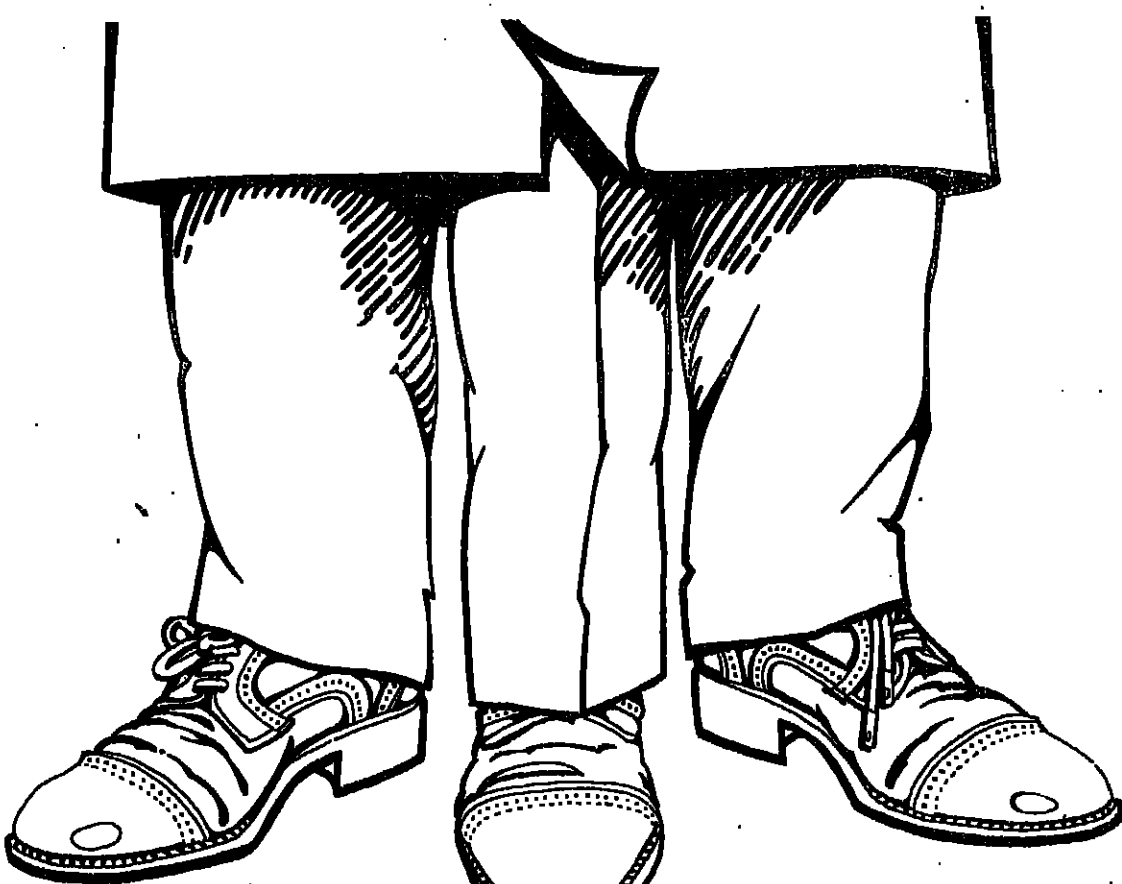
APPLE Computer may apply severe restrictions on retail outlets carrying its computers.

The company last week made moves in the US to give it a stronger voice in selecting the physical locations selling its hardware, and it will shortly extend that philosophy to European countries as well.

In recent letters to franchise chains such as Computerland, the Computer Store, and others, Apple said it had to have site-selection privileges for all future locations.

Individual stores in these chains currently carrying Apple computers would not be affected. Apple said it was making the move because of concerns of over-population of stores.

Although laws vary from country to country, the spokesman said its legal staff was currently investigating the situation. He did not indicate how Apple would be able to stop effectively the purchase of Apples for retail sales by a group of computer retailers banding together.



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Computer Weekly

Thursday June 10, 1982 Vol 32 No 812

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Editor David Craver 01-861 3122		Deputy Advertisement Manager Chris O'Hara 01-861 3125		CONSULTANCIES SALES Sales Manager Chris Prier 01-861 0121		Subscriptions UK £22, Students £11, US Canada \$33.00, Students \$16.50, Single Copy £3.00, Students £1.50, Middle East, North Africa (telmail) £24.00, North & South America, Southern Africa, South Zealand (telmail) £24.00, Australia & New Zealand (telmail) £24.00, Overseas (airmail) £24.00, Overseas (surface) £24.00.	
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Software Editor Claire Gooding 01-861 3043		Deputy Sales Executive Michael White 01-861 3500 x8579 Gordon Bradley 01-861 3128 David Hogan 01-861 3500 x8539 Xenia White 01-861 3500 x8571 Middle East computing David Hogan 01-861 3500 x8539		Sales Executive Neil McDonnell 01-861 0121 Tracey Benstead 01-861 0121 Gillian Clifford-Smith 01-861 0121 Chris Markiewicz 01-861 0121		Micro Editor Robert Parry 01-861 3044	
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Hitachi moves into UK business micro market

by Robert Parry
JAPANESE industrial giant Hitachi is entering the UK microcomputer market, with emphasis on business systems.

Hitachi has chosen the UK to be the first country outside Japan where it will sell its 16-bit micro, although it will not appear here until early next year.

While a major manufacturer of chips, computers and video monitors - Hitachi claims to supply 30% of monitors worldwide and that 30% of the world's micros rely on its technology - the company is best known in the UK for its consumer electronic products. The same company that sells these products, Hitachi Sales (UK), will look after the microcomputer products, working through a network of about 100 dealers which is being set up under a computer products division headed by Ted Marshall.

The spearhead of Hitachi's attack on the UK market will be its 16-bit machine. Built much in the IBM model - an 8088-based machine running under MS-DOS and aimed primarily at the business user - it has been sold in Japan since last September and makes its first appearance outside Japan at this week's National Computer Conference in Houston.

But the UK will be its first foreign market, says Marshall, who is convinced it will become a major force on the UK micro scene. He is backed in this by Hitachi sales marketing director Stan Fenner, who sees microcomputing in the UK as "our next major sector of expansion."

The machine will sell for less than £3,000, with RAM expandable from 64K and high resolution display capabilities in 16 colours. It will have Basic, Cobol, Fortran and Pascal as well as assembler for programming.

Part of the reason for the delay in introduction is the continuing shortage of purpose-written programs for the current crop of 16-bit machines.

"We have no intention of releasing the machine on to the market until we have a good range of application software - and until dealers have been trained," says Marshall.

SALES BRIEF Fisons buys HiNet local area network

FISONS, the horticultural and pharmaceutical company, has installed a 500 Kbit-per-second HiNet local area network made by Etnet's California-based subsidiary Digital Microsystems. The network, which was supplied by Solwen Systems of Witham Essex, will be used to provide CP/M-based processing facilities to the 10 workstations attached.

By the end of the year, Fisons plans to have 20 of the permissible maximum of 32 workstations attached to it.

Mascot for SPL

SPL INTERNATIONAL has followed up its design study for the Admiralty Surface Weapons Establishment by winning the contract to develop a Mascot (Modular Approach to Software Construction Operation and Test) pre-processor. The pre-processor will extend Coral 66, the language the MoD has standardised on, to provide the features used in building Mascot-based systems.

Into Gaelic

LUCAS Electrical has ordered a Compeda Gaelic integrated circuit design system for its Merz Green semiconductor factory. The system will be supplied with a Prime 150 mini, two workstations and two plotters under a turnkey contract worth over £170,000. Lucas' research centre has used a Gaelic system for three years.

Army order

ROYAL Army Pay Corps has completed acceptance trials on an 8,000 line-per-minute Honeywell FPS non-impact printer and has ordered a second to be installed next April.

Case tackles user worries on local nets

by Donald Kennett
USER anxieties about local data networks are being tackled by UK data communications manufacturer Case. It has combined a speech-plus-data technology with a data switch based on its DCX range of wide area network switches and multiplexers to build a system - called Grapevine - which uses existing telephone extension wiring but keeps data switching separate from voice switching.

"It gives users quick and easy terminal connections without mucking up their decor," said Case chairman Duncan Fitzwilliams.

Product planning director Derek Laval, one of the company's founders, added: "The wiring problem is the one that obsesses people most. But it is not enough to address that problem on its own, so Grapevine provides a high degree of connectivity. Nobody else has that combination, nor does

anyone else have a local system integrated into wide area network."

The connectivity provided by Grapevine includes user-to-user call selection as well as computer port contention with hunting and queuing. A Grapevine switch can start with a capacity of eight channels and build up four at a time to a maximum of 240 channels. It can then be connected via a composite link in a DCX network to another 240-channel unit.

Outside connections can be set up through a Case MSX message switch to the public telex network. An enhancement on the way for the MSX will allow dialled connections to be made automatically over the telephone network. Access to X25 packet switched networks such as British Telecom's Switchstream One is available through DCX system gateways.

Like DCX, Grapevine is based on the Texas Instruments 9900 16-bit microprocessor. In a fully-configured 240-channel unit there will be 70 of them working together.



FITZWILLIAMS... Quick and easy.

The speech-plus-data modules, which are made by Telnet in the US, are claimed to be the first to gain British Telecom approval for operation on telephone extensions. Because they are not limited by the bandwidth of the public telephone network, they can support full duplex asynchronous transmission at up to 9,600 bits per second, compared with a maximum of 1,200 bps for equivalent public network devices.

Prices start at £5,000 for an eight channel switch, which rises to £9,000 when fully configured with speech-plus-data units and gateways. A 32-channel switch costs £20,000. The speech-plus-data unit plugs in between the telephone and the wall socket at the terminal end and can be unplugged for line testing.

France withholds US technology for Soviet-made micros

by Jack Gee
FRANCE has jeopardised a major contract with the Soviet Union by refusing to deliver equipment for making American-designed microprocessors in a Russian factory.

French officials declined to identify the US firm involved in the venture which concerns Thomson-CSF MT 20 time-division telephone exchanges. The factory was due to be opened at Oufa next year.

The row between the French and the Russians became public knowledge after a government delegation from Paris told its Soviet partners at a Joint Trade Commission meeting in Moscow that the US technology could not be delivered.

The French explained that the microprocessor know-how was subject to an American embargo imposed on exports of sensitive equipment to East European Communist states.

The embargo was imposed after the Army seized power in Poland last year.

In an attempt to appease the Russians, France is offering to supply the computer components itself, or to deliver French instead of American microprocessor technology.

The French Ministry of Industry said the Soviet contract, which was signed in 1979 by President Giscard d'Estaing's government, did not conform with French commitments to COCOM, the NATO-sponsored organisation which co-ordinates efforts by Western countries and Japan to prevent the Communist powers obtaining access to advanced military information.

President Francois Mitterrand has been increasingly insistent on the COCOM arrangements, in contrast with the flexible attitude of Giscard's officials.

Last year Mitterrand imposed a delay of six weeks before approving a 1.8 billion francs (£180 million) contract for the sale by Thomson-CSF of electronic equipment for the 3,000-mile Soviet natural gas pipeline from Siberia to Western Europe.

Technology exchanges to be set up by NCC

by Boris Sedacca
THE National Computing Centre is seeking to extend its areas of activity by instituting a new type of membership.

The NCC is setting up a number of groups to be known as Information Technology Circles which will allow subscribers to work together in workshops and to exchange information.

But the Centre is coming under fire for neglecting other areas, particularly its training packages which form the basis of short courses at colleges of higher education and polytechnics. Plans to resolve this problem will be released soon.



FAIRBAIRN... "Our policy to update"

Four IT Circles will be set up initially to cover office technology, communications, data processing and systems engineering, and security.

The NCC claims that subscribers to IT Circles will be able to influence the direction of its research and development programmes. It is planning to invest £750,000 in the scheme this year.

Meanwhile, plans are going ahead to update its existing training packages and to create new ones. The packages are sold to private companies for internal training programmes, as well as to education centres.

Students of the NCC systems analysis certificate at the Polytechnic of Central London, most of whom have been sent on the course by their employer, the Central Computer and Telecommunications Agency (CCTA), have criticised the course material as being outdated.

Commenting on these criticisms, David Fairbairn, director of the NCC, said: "It is our policy to update course material where changes have taken place."

The NCC says the Systems Analysts Examination Board is currently reviewing the syllabus for the NCC certificate.

US progress on standard for electronic mail

by Howard Kartan
A DRAFT US federal information processing standard (FIPS) for electronic mail is nearing completion and will shortly be forwarded to Commerce Secretary Malcolm Baldrige.

The document details the fields an electronic mail message must contain if it is to be able to communicate with other electronic mail systems.

If the draft standard is adopted, all vendors supplying systems to the federal government would be required to comply with it.

Given the economic clout of the

federal government, such a move would be a big spur towards standardisation in the private sector as well.

According to Shirley Watkins, manager of National Bureau of Standards' computer-based office systems project in Rockville, Maryland, the document under consideration concentrates on message formats and avoids specifying internal details.

Watkins estimated that final adoption of the standard by the Commerce Department could come as soon as six months from now.

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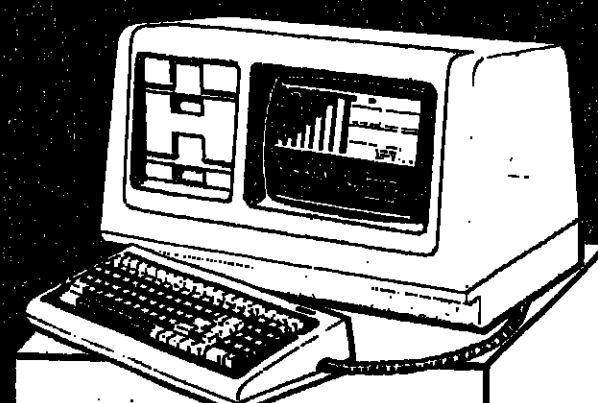
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HOLLAND . . . Improved training can cut unemployment

SRMS, he says, has the advantage of being easy to use, is fully interactive, and has simple English-language commands.

Internet on the other hand is portable across a range of hardware, including the IBM 370/Control Data 6600, Prime and ICL 1900. It uses a preprocessor to generate from a common source program code local to the machine on which it is implemented.

According to SIA, which markets Internet on a bureau basis, it does not matter much whether a large project planning system runs on a batch or time sharing basis. So long as the data files can be quickly set up and edited online, results can be produced quickly on a batch basis.

"The thing has to go away and do its analysis in any case," says SIA's management systems sales manager Alan Pearce, who admits, however, that many people would opt for a fully interactive user-friendly system.

That SRMS can only run under the IBM VM/CMS operating system is not seen by Tymshare as any great restriction. "The market is huge," says Tymshare's UK London area manager, Jerry Goldman. There is anyway a shortage of software running under CMS and SRMS fits the niche nicely.

MARKHAM Mutually beneficial.
systems will be supplied to the Joint Speech Research Unit at Chatterham.

By Howard Karten

TWO more US companies are feeling the effects of the current recession. Formation, a New Jersey-based maker of IBM plug-compatible systems, has announced that it is laying off 20 percent of its 325 employees. Formation, which last year had revenues of 17 million, is also reducing its salesforce.

Current economic conditions and a leveling off of the order rate were blamed for the lay-offs.

In Florida, Modular Computer Systems shed some 50 of its 1,000 employees. "In those organizations which lack suitable work to support Modcomp's current business plan," according to company president Gabriel Ro-

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MICRO NEWS

Microprocessors are moving up market but is the software development support managing to keep pace?

Support for users is key selling point behind latest high performance chips

SUPPORT for users is the key area behind the recent spate of high performance microprocessor announcements. Development software and hardware integration aids have to be available — and seen to be available — soon after the chips are talked about if they are to make their impact in the marketplace.

Intel, Motorola and National Semiconductor have all released details of 16/32-bit microprocessors in the past couple of months, and are all pushing development support.

Motorola, which announced extensions to its 68000 family in March, has released an update for the Exormacs development system, including a symbolic debugger and an improved macro assembler for the 68000 and 68010, and a new Pascal compiler. It gives speed increases over the previous Pascal, with a compilation

speed of 650 statements per minute on average compared to the old version's 250, and better code optimisation. Object code is on average 40% smaller than that produced by the previous Pascal version.

But software development tools like this are not the only treats in store. The end of this year will see a real time emulator for the 68000 running at 10MHz, which will take the form of a family interface module to the Exormacs system plus a personality module.

Intel, with its iAPX 186 and 286 additions to the 8086 family, is also getting off the mark with software development and high-level language packages. Last week it announced its first software kits for the 286 to start appearing in July.

The software development package contains tools to allow programmers to design and configure protected multitasking

systems. It includes utilities for program linkage and system building that make the memory protection features of the 286 transparent to the application programmer.

The high-level languages Intel is to offer first are PL/M, Pascal and Fortran, and the compilers will be available separately for application software development. PL/M-286 is a system implementation language that offers built-in access to the memory protection features of the 286.

With these products Intel provides the means for users to design directly with the 286 high performance microprocessor, rather than upgrading designs using the 8086 processor and development tools.

But Intel is quick to point out that the new 286 software development tools are compatible with the 8086 products already

RADA . . . In-system emulation is available with hardware launch of a microprocessor for the first time.

around.

Family ties are important in the race for the high performance microprocessor market, and those already well established — as Intel and Motorola are — put great emphasis on continuity of designs. For the 186 processor Intel announced last week in the UK, the existing 8086 design tools and programming languages can be used to develop code.

But even these things are looking up, and ASM-86 and PL/M-86 will be updated in September to support the extra instructions the 186 has.

Both the Intel and the Motorola 16/32-bit families are rooted in products with significant histories and established development tools. NatSemi's entry into the race last week came — as it had to if the 16000 family is to make an impression on the market and gain widespread user acceptance — with a clutch of development tools to accompany the 16032 hardware.

A cross software development package, to produce 16032 code and running at first on a VLI 11/750, consists of an assembler, linker, librarian and symbol table. A Pascal compiler will be available later in the year, or versions running on NatSemi's own development system Super.

An in-system emulator is available for delivery in September. "This is the first time system emulation is available in the hardware launch of a microprocessor," claims NatSemi's European marketing manager for the 16000 family, Col Rish.

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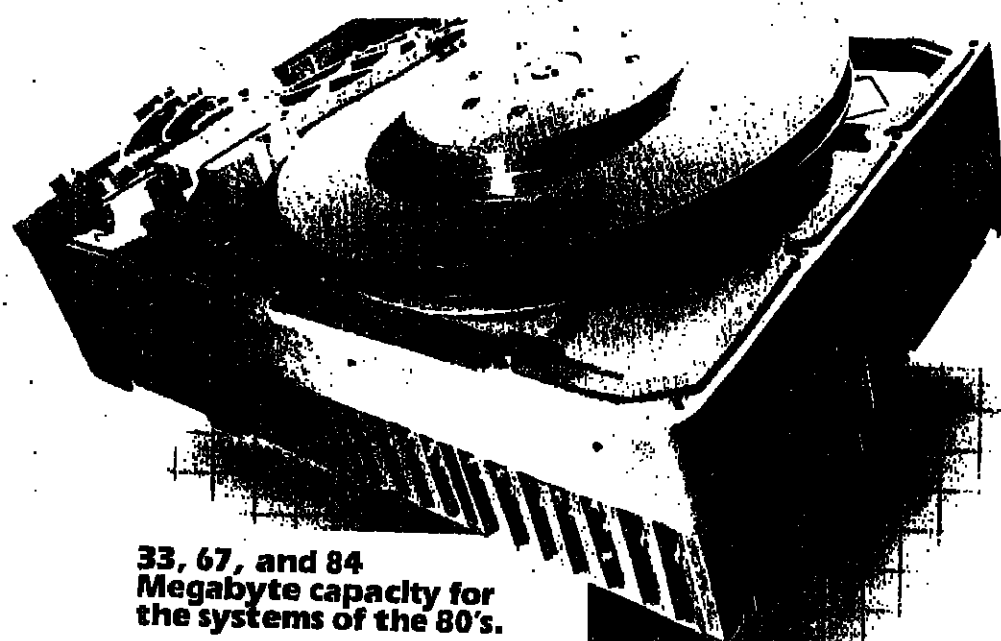
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PERFECTING TECHNOLOGY

Cifer plans £20m turnover by 1986

INTELLIGENT terminal and desktop computer builder Cifer Systems of Wiltshire has extended its factory to increase production capacity to over 10,000 units a year.

It is the start of a planned expansion programme that will increase staff levels to 250 from the present 150, and push this year's expected £5 million turnover to £20 million over the next four years.

Marketing director Stuart Gregory puts Cifer's growth and success down to its commitment to R&D, and to its stable manufacturing base well away from London.

He also emphasises the importance of Cifer's use of tested technology that is technically sound and cost effective.

The expansion plans for the next year include additions of new case styles for the desktop products, and the introduction of 32-bit microprocessors, megabyte memories, and a bigger range of Winchester disc drives.

British micro manufacturer Casu is also set fair for continued financial growth and factory expansion. The company, which is very much based on British Telecom's purchase of its Super and Multi C microcomputers, is ahead of target for a 100% growth rate in 1982, says marketing sales director John Burrow. The company recently received a bill of £1 million for the month of March.

Casu has just produced its sandh microcomputer and is soon moving to a new factory more than tripling the production capacity of its present factory in Ruislip.

LSI develops a 'task oriented' processor

CUSTOM and standard chip manufacturer LSI Computer Systems of Melville, New York, has developed a task-oriented processor for control applications. It is called the integrated controller-sequencer (ICS) and is designed for operations like logical sequencing, timing and controlling functions which require simple decision making.

The chip has been deliberately designed with these types of operation in mind, rather than computational operations, and should prove cheaper and easier to program than general-purpose microprocessors.

The ICS has a microprocessor architecture and uses industry standard memory to store external

programs of up to four Kbytes. Advantages claimed for the chip over hard wired electromechanical and semiconductor logic networks include the usual lowering of cost — in materials and labour — and increased flexibility in programming devices.

It accepts inputs from a variety of switch types, performs functions such as testing inputs, bit processing and simple arithmetic as well as logical evaluation and sequencing, outputting instructions to actuators like solenoids and valves, and to displays.

Applications seen for the chip include office equipment and time clock systems — along with automatic lawn sprinklers, car wash controls and psychedelic lights.

Cassettes for ZX81

THE range of program cassettes from Sinclair for its ZX81 microcomputer has been increased as part of a planned expansion of the ZX81 software range. Seven games and business cassettes with programs developed by software house Pelon are now available through mail order and from high street stockist W. H. Smith, which placed an initial order of 30,000.

The programs use the cassette code to exploit the maximum capacity of the ZX81 and its addition to 16K RAM pack, says Sinclair. Two business applications are included: Vu-Calc to generate spreadsheets for financial analysis, and get sheets and projections, and Vu-File for general purpose filing.

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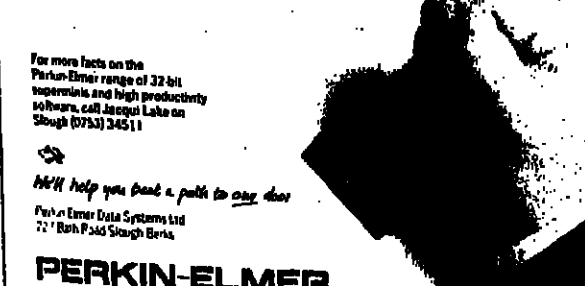
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Software firms learn to lure impulse buyers

AS chains of microcomputer shops mushroom in high streets, software houses are realising the importance of the packaging of their products.

The browsing shopper is unlikely to be attracted by a protective piece of cardboard wrapped round a floppy disc, shoved into a plastic bag with a flimsy list of instructions, neither will it inspire the customer to buy the real thing instead of a cheaper pirated copy of the software.

Off-the-shelf software calls for supermarket-style packaging techniques, which have already largely been adopted in the US. There is also the need to make the products appear substantial and therefore, by implication, bug-free.

"As there are more and more products available, increased product perception means that packaging must get more important for the high-volume markets," said Stuart Lang, a founder and managing director of Micro Focus.

A specialist in system software, particularly CIS Cobol, Micro Fo-

cus is now reassessing its packaging, and looking at the possibility of introducing colour into its manuals. "We want the user to feel warm and comfortable with them," explained Lang.

One of the more recently-formed companies that has already won acclaim for the quality of its documentation and presentation is Caxton Software Publishing.

"We aim to give substance to the fact that the whole product, including the software part of it, is a quality product, and to inspire pride of ownership in the purchaser," said Bill Barrow, a director of Caxton.

He added that he feels it is important to have the disc(s), tutorial and reference manuals, and reference cards, if any, in one box, so that they can be taken away as a total pack.

Caxton allows approximately 10% of the overall selling price of a product to cover packaging and promotion, although it would be less for very inexpensive items.

Comshare is fast making a name

for its colourful packaging. The London bureau puts the packaging price at around £25 for a piece of software selling for £400, down to £5 for a £30 product. Its attitude to the subject is totally different from that of Caxton.

"I don't think micro software is a very earnest area, because the quality of the product doesn't usually live up to the image. A lot depends on the size of the company: the American end of Comshare is fairly small, so it goes for an up-market, conservative image, while we go for a bright and breezy approach. We're a bit bigger, so we can afford to let our hair down," says Nigel Pendse, financial products marketing manager.

Letting its hair down has resulted in some imaginative projects, such as the commissioning of young, unknown artists to produce designs incorporating the Comshare "head" logo.

One experiment, red plastic briefcases to contain the Fastplan financial planning system, led to complaints from dealers that cus-



Optimiser, the first offering from Caxton Software Publishing.

"The problem is that the snappy little versions will only hold 54in discs, and the ones that can take an 8in disc are too large to fit into most people's briefcases," explained Pendse.

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SOFTWARE BRIEF

Schools' 'write your own' contest

A SCHOOL software competition has been launched by Prime Programs, jointly sponsored by Hutchinson Education and Transam Computers. Open to primary and secondary school teachers, the competition is for the best educational program for use in any subject up to A-level. Programs for most machines are acceptable, and cash prizes ranging from £500 (first) down to £100 will be offered. Closing date is July 1, and entry forms are obtainable from Bob Osborne, Prime Programs, 17 Conway Street, London W1P 6JD.

Osborne commends

RESPONDING to the plea for more software for the Osborne portable microcomputer, Line Micro Computers has announced communications packages to allow the machine to be used as an intelligent terminal to a remote minicomputer or any other minicomputer. Priced at £100, Comm includes built-in editor and automatic error detection with manual retry.

Total retrieval

MINICOMPUTER system manufacturer Gould SEL, a subsidiary of Gould Inc in Chicago, has introduced an English language query facility to work in conjunction with the Total database manager. Called T-Ask, it is a procedural information retrieval language which allows online interactive interrogation of the database for ad hoc enquiries.

Debt accounting

SPECIALIST in legal and medical software Automatic Information Management (AIM) has added a debt accounting package, Debtcharter, to its Charter range of legal systems. Currently available on ICL System 10, and shortly on Digico equipment, Debtcharter keeps track of the solicitor's charges, money owed to the client by debtors, and disbursements on his behalf.

Range for R-range

A COMPREHENSIVE range of software packages for Rediffusion R800 and R1800 series minicomputers has been released by John Lane Systems of Peterfield, Hampshire, part of the John Lane Group. Costing between £1,500 and £3,500, products available include financial ledgers, time recording, word and text processing, mailing, and a report generator which JLS believes to be unique to the Rediffusion R-range of equipment.

Fixed assets

TWO leading photographic companies, Agfa Gevaert and Durr, have bought the IBM System 36 version of the Sapphire fixed assets package developed by Pentagram Software Products of Amerham.

For car dealers

A MINICOMPUTER system for motor dealers is now available from MAI, for running on its full range of machines. Offering full range of processing facilities, Deal handles new and used vehicle sales, workshop, spare parts and accounting.

Brokers' system

A REAL time commodity and foreign exchange system has been announced by Peter Levin, a specialist consultant, for running on Datapoint minicomputers. Shortly to be installed at commodity brokers Rudolf, Wolf & Co, Adaptable Currency Commodity Real-Time Datapoint (ACCORD) covers world markets on a hourly or daily basis, and claims for up to 10 companies using the same market and client base simultaneously.

OP SPOT

Instead of a bureau, why not hire an outside firm to run the whole installation?

IN a time of recession, one of the areas that companies subject to close scrutiny is data processing. The DP budget is a major item on the corporate balance sheet, and many firms are seriously looking for an alternative to an in-house installation.

An obvious if extreme step to take is a complete shutdown of the computer department and the transfer of the workload to a bureau. But apart from the large number of redundancies caused by such an action, there is also an effective loss of control.

It is extremely unlikely that there will be a bureau located just down the road, and deliveries of output from batch systems will always be that much slower than was the case with an in-house machine. Debatching, decollating and delivery of output has always accounted for the largest proportion of time in the cycle of a batch system. Time on the machine typically takes less than five per cent of the turnaround time.

Another alternative: becoming popular, particularly with small companies, is a shared data centre, which serves several companies' needs. With costs divided between them, the operational costs are greatly reduced, yet the members of the co-operative still maintain the personal contact with the operations and systems staff which is often lost when moving to a bureau environment.

But there is a third option for the company looking to reduce its overheads, which falls somewhere between these two extremes. When it is decided that an in-house computer has become an expensive luxury, firms can hand

over their entire DP department — hardware, operators and systems staff — to an outside company which will then run outside the installation.

The traumatic handover of work from an in-house machine to either a shared installation of a bureau is avoided. The workload continues to run on the same machine with the same staff.

Handling over computers to be managed by another company first became an option in the late 1960s, when the Hoskyns group started its facilities management service. Since then, over 60 firms have had their computers taken over by Hoskyns, ranging from banking and local government to manufacturing and stockbroking.

Obviously, running 60 machines is impractical owing to the large amount of spare capacity spread across them. What Hoskyns has done is to set up a central core of three major data centres, with the facilities management sites linked to them.

Hoskyns currently has nine satellite data centres linked to the main three at Trafford Park in Manchester, Gravelly Park in Birmingham, and Regent's Park in London. The total workload is constantly assessed, and there are often surplus machines of one particular architecture.

When this happens, the workload of one or more of the satellite centres is transferred to a central installation, the hardware and staff being redeployed elsewhere in the Hoskyns network. Not only are jobs made more secure when a facilities management deal is signed, but the prospects for working on different manufac-

turers' kit and travelling to different installations are enhanced.

A further benefit to the user who decides on facilities management is that of resilience in the face of disaster. With the spread of hardware around the UK, Hoskyns can quickly move critical work between data centres, assuring the client of virtually uninterrupted service.

Alex Lander, the man responsible for the running of Hoskyns' facilities management deals, says that he has resisted the temptation to go over entirely to one manufacturer's hardware. The company's facilities are split roughly 50/50 between ICL and IBM.

"We don't want all our eggs in one manufacturer's basket," he says.

The Regent's Park centre, converted from a warehouse last year at a cost of £500,000, currently houses a 4341 and a 3701/148 from IBM, and a 1903T and a 2904 from ICL. Another 3T is currently in use at the Smith's Industries site in Cricklewood — a recent deal — along with a 1904S.

Dave Warne, manager of the Regent's Park centre says that the 4S is likely to be moving in to the central site soon, enabling one or more of the smaller machines to be disposed of. Two separate shift systems are in operation at Regent's Park — three shifts with shift leaders for the IBM machines (one shift leader is responsible for training), plus 17 ops, and a two-shift system for the ICL machines, each with two and a half operators.

Cricklewood currently has five on a shift, but numbers will swell when the ex-Smith's machine is moved in. In accordance with modern trends, no shift allowance is paid. There are 19 users of the IBM machines, and nine of the centrally-located ICLs. A further dozen ICL customers are served from the Cricklewood centre.

Maintenance is handled by the manufacturer's own engineers. Both Warne and Lander expressed the view that this is still preferable to the use of third party contractors. Warne also pointed out the difference between ICL and IBM engineers:

"IBM engineers tend to be bright young things, while ICL seems to use mostly older, jovial types." I will not comment.

Warne favours IBM hardware,



Dave Warne watches his favourite hardware being operated by Phil McGoldrick.

citing the number of goodies available, such as colour consoles and terminals, but says that ICL's operating systems leave IBM's standing.

A development of facilities management, aimed at firms contemplating a move to new hardware, covers either the move from one generation of machine to another, or to a different manufacturer.

When taking into consideration the average time which elapses between major hardware upgrades (around the five-year mark), and the usual length of stay at one company of ops and programmers (three years), it can be seen that any expertise gained in an upgrade done in 1980 will probably have

left the company before the next one is due.

Thus most firms are singularly unprepared for a painless transition to new hardware. Companies such as Hoskyns, on the other hand, are frequently transferring workloads and moving machines from one location to another as they take on more facilities management deals and rationalise their computer resources.

The Hoskyns service, known as Crossroads, differs from normal facilities management in that the complete takeover of the client's computer department only lasts for the duration of the problem period between the rundown of the old service and the stabilisation of its successor.

If it shocks you, it'll horrify your hardware

ANYONE who has worked with computers for any length of time, or any electronic device for that matter, will have experienced many static shocks from the hardware. To be more exact, it is the hardware which receives the shock from the humans, their personal static charge being earthed through the equipment.

Walking on nylon carpets and wearing non-conductive shoes both contribute to static build-up, but the discharge rarely causes operators much concern beyond the initial discomfort and the choice of which explosive to use.

Computers, however, tend to be much more afraid of static electricity, and with good reason. The sudden appearance of several kilovolts at one side of an integrated circuit usually results in deep-fried chips.

At one site where I worked, the paper tape reader (yes, this was some time ago) tended to charge up the paper tape as it went through the read station at great speed.

The charge would then build up in the metal bin designed to catch

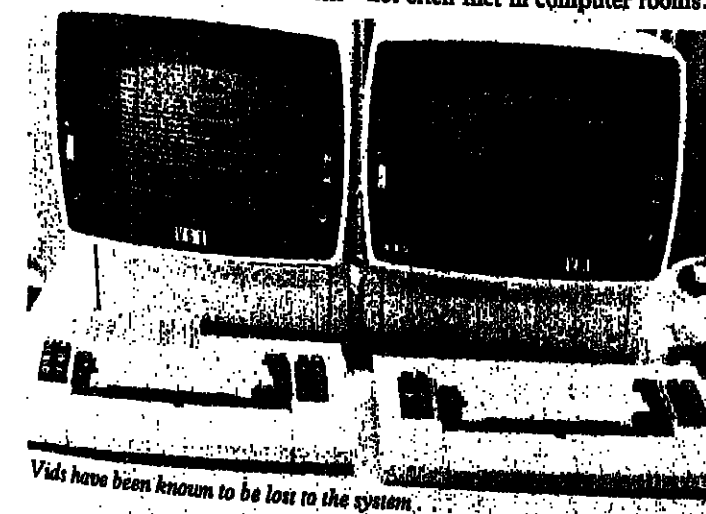
the tape, and when sufficient voltage had accumulated, it would discharge back through the reader. Although the reader itself was earthed, the static would follow the earthing system to the drum used to store the operating system.

The shock of this event proved too much for the system to bear, and there were many extra teabreaks while the system was being reloaded.

The simple expedient of earthing the tape reader's bin cured the problem and brought the unscheduled interruptions to an end.

The other static-related problem I have encountered has been the "sitting down at a VDU... OUCH!... oh rats, the thing's gone into send" situation. This usually only causes an annoying delay after logging in as the terminal moves its cursor across the entire screen in a vain attempt to find the commands that you haven't had a chance to type in yet, although vids have been known to be lost to the system as a result.

Think yourselves lucky that volatile and flammable liquids are not often met in computer rooms.



Vids have been known to be lost to the system.

A report from the health and Safety Executive* on the hazards of static build-up cites the following example:

"In a typical incident an operator was in the process of loading an earthed 900-litre mixing vessel. After he had added 175 Kg of toluene, he started to add epoxy resin in 25-Kg lots from paper sacks. He had emptied three sacks into the aperture in the top of the vessel, and as he looked inside it, there was a discharge from him which ignited the vapour in the vessel."

The subsequent investigation showed that he was wearing insulating rubber-soled shoes and that the floor was covered with a thick

layer of insulating resin deposits." The report does not actually say that all that was found of the operator was his shoes, but I'd be careful with the isopropyl alcohol in future if I were you.

* Electrostatic Ignition: Hazards of Insulating Materials. HMSO, 49 High Holborn, London, WCV1 6HB. £1.50.

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Body language of the interview room

WHEN it comes to looking at existing information systems prior to designing a new one, the systems analyst has many fact-finding techniques available. One of the most popular and frequently used is the interview.

It does offer a fast method of getting answers to particular questions, as well as being the only way to determine some information.

Professional analysts carefully arrange their interviews, making sure that the interviewee is correctly approached and that appointed times are adhered to. The analyst will prepare a list of the information required from the interview; however, a very important part of the interviewer's job, in this context as in any other, is to listen to what the person being interviewed has to say about the topics under discussion and their environment.

The main purpose of the interview may be to obtain specific information, but another equally important objective is to establish a good relationship with the people being interviewed. This is vital to the successful design of the new system and especially to its implementation.

So, an interview should lead to the analyst receiving some specific information and, in addition, some information about the interviewee. The specific information can sometimes be verified by observation or by consulting records or other methods.

Here we observe an illustration of systems theory: the prepared topics of the analyst can be viewed

as input to the interview, the information obtained, both direct and indirect, can be viewed as the systems output, the processing can be seen as the interaction between the two people in the interview, with each monitoring the other's perception of the information transfer to check that correct understanding has been reached.

Later verification of any quantities is a form of error control. The physical environment and the organisational context of the interview can be recorded and inspected.

In an interview the attitude of both parties can have an enormous effect on the information transmitted

Closer examination of the processing shows us that there is more than one form of information transfer between the two people. There is the verbal information and, with it, a whole host of messages often referred to as "body language".

It is a well known fact that, in an interview, the attitude of both parties can have an enormous effect on the information transmitted. A large aggressive person interviewing a shy junior may get very different information than if the interview had been conducted by a smaller, very friendly person.



Anne Leeming lectures at the Centre for Business Systems Analysis at City University. She is also a consultant on microcomputer systems.

A quick look at TV interviews will supply plenty of other examples.

The analyst does not yet have any formal techniques for recording such body language. It can introduce bias into the information transferred. An experienced analyst will recognise the bias when it occurs and consider it when interpreting the results of the interview. But the full extent of the effect of bias on the interview is not known with any sort of accuracy so it is difficult to know how much allowance to make.

We have quite a problem here; it is possible or desirable for an analyst to so control or tailor his interviewing techniques that his attitudes will have no effect on the interviewee? Alternatively, is it possible to develop some method of recording "body language" so that all the information being transmitted in an interview could be assessed and evaluated? A middle way might be to train interviewers to at least recognise such problems.

After all we can't all be like Sir Robin!

Anne Leeming

Filing your papers can be a bind

THE youngsters at school find a need to organise their papers in what they call a file. The word has a more precious meaning in computing and so the utilitarian term ring binder comes to be used in later life. And it's not just the term, but the binders themselves, that grow as row on row come to accommodate the manuals intended to contain the answers to every sickness that ever invaded a system.

The distribution of manuals in ring binders brings its own disease. The rings on binders have been through the post never seem to close properly again. As the pages are turned the leaves come off the rings and half the value of using binders is lost.

It's no good attaching your infatuation to the Post Office. Their system is for bulk handling over distances and they have always made it clear that packages should be properly packed.

What can be done? It's not sufficient to rely on a padded bag. The padding will absorb shocks when the bag is manhandled, but not weight if your binder is at the bottom of the pile. A rigid container is called for that will enable the ring binder to travel in its own little protected environment. If a heavy weight of paper is already on the rings then the pages should be retained to avoid deceleration forces deflecting the rings after a short flight through space in the sorting process.

An alternative strategy is to use a heavier quality mechanism in the binder. A light and consequently cheaper mechanism may be quite adequate on the shelf and for reference but heavier quality mechanisms are available. The binder



Cliff Dilloway is an independent consultant specialising in accounting software, taxation and payroll.

manufacturers usually buy in the mechanisms and make up to order, so if transit is among your requirements then so should be a stronger mechanism.

In the same vein a mechanism with a wider base should be able to stand the shocks of transit, but again they cost more. Without much evidence to back it up, the rectangular style of ring is believed to be stronger than others. Certainly this style of ring will more readily accept masking tape over the joint to permit the two halves of the ring to share the shocks of the journey.

One form of protection that I can recall seeing but have not been able to track down commercially is a purpose-made polystyrene former. Fitting inside the binder and over the rings the former holds everything tightly in place and absorbs the load and shocks.

Those who need to distribute their manuals by mail should see the advantages of binders reaching their customers in a usable condition and a simple solution to that problem is what is needed.

Cliff Dilloway

Candidates for job burn-out

WHILE the DP team have their collective heads down producing user friendly systems, their jobs could be growing unfriendly. A US report suggests that burn-out symptoms are frequently being identified among DP teams, the only known remedies being rest, relaxation, and change of job.

The epidemic is not necessarily limited to DP personnel, at least in the UK. High on the job burn-out casualty list could be Mike Kenneth Baker and his IT awareness team, the director of NCC, David Fairbairn, through attempts to organise and regulate software product schemes, BCS leader in condemning government privacy proposals, ICL management in trying to keep pace with their energetic salesmen trying to keep pace with demand.

It is possible that the authors have already made some contingency plans for the burn-out of man. An IT exhibition at the London Science Museum has opened. Alongside the British Leyland computing systems is listed, some prime examples of burn-out DP managers could be displayed.

Certainly there should be a lack of supporting equipment. According to a useful publication from the PCML group, current printer ranges can operate at speeds approaching 20,000 lps — a speed which should guarantee rapid machine and paper burn-out, if not burn-in.

The company also tackles the problems of tape streaming systems. With transfer rates exceeding 90 Kbytes/sec, the tape would not only be in overdrive by streaming mode, but showing signs of seaming, and easily qualify for a place on the IT DP burn-out stand.

The burn-out symptoms are reportedly various and insidious but most involve a loss of energy and working enthusiasm. With reports that over 50% of the US data centre workforce are already afflicted by the complaint, it is only a matter of time before the pestilence spreads across to UK installations, with the probable exception of State and banking DP centres where stress and strain attitudes are seldom present.

Many industry observers would already claim that job burn-out is hardly likely to affect most large DP personnel, who in the main suffer from job boredom, job frustration and general job dissatisfaction. Job stress, however, does not seem to be a listed factor for those involved in changing jobs.

A review undertaken by the Californian State Polytechnic found that DP personnel moved jobs because of existing limited opportunities, non-existent career and promotion paths, and general frustration in getting over-ambitious projects off the ground.

Closer to home, reasons for leaving tend to be rather more practical. Quoting for more personnel, probably leads the field, followed by job enlargement — the task rather than the individual. Plus a strong suspicion that job hunters stand a better chance of their track record revealing that they have moved around the industry regularly.

In fact job hunting has been a contributory cause for job burn-out families. Having to fill in unco-ordinated and unstructured job applications, each requiring different sets of figures, could turn head-banging into head-banging procedures.

But an often-with protests, the exhibition was only a catalyst. The aim was to secure the release of four protesters arrested at a previous demonstration.

Or perhaps the Germans were merely fulfilling the old Byzantine proverb: The fanatic redoubles his effort on forgetting the aim.

Chad

ComputerWeekly

Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS

Thursday, June 10, 1982

Technology for a civilised society

THE Pope has come and gone, the war in the Falklands lingers on. Information Technology Year has reached its halfway stage. At Versailles the Western world leaders met and President Mitterrand made a call for the industrialised nations to ensure that new technology is used to create, rather than destroy jobs.

We in the computer industry might be excused if we are confused about what is and is not important within the bounds of our once cloistered world. The fact that the bounds have dramatically widened over the past decade, largely as a result of the "microchip revolution", is probably the cause of much of the confusion. Computer Weekly has always identified itself with the mainstream of the computer industry, and will continue to do so. But the hyperbole which is attached to the grander world of "information technology" threatens to blur the issues which are of most importance to us.

Not quite lost in the hoop-la which attends any summit of the "free world" leaders was the report by Mitterrand which considered the effects of new technology on employment and the general well-being of the world. Among other things he called for an immense training effort, and a more "civilised" use of technology. Clearly in Mitterrand's mind was the danger of an elite sector of society having a corner on the knowledge of how to make technology work for us.

There have been moves in this country to tackle the problem of training in what Mitterrand and others have called the "third industrial revolution". But while the Thatcher government has made much ado about its £1 billion New Training Initiative, the sad fact is that the same government is overseeing an extraordinary ravaging of the educational system. The cuts in education budgets and with it the denial of university places to qualified school-leavers, will in another ten years' time rank as one of the most short-sighted decisions of this government.

The government must be made to understand that a nation which hopes to be at the forefront of new technology needs a highly educated workforce. The guns or butter argument needs to be expanded into education.

Good relations

IT is all too easy for young high technology companies which are experiencing growth pains to overlook the importance of good industrial relations practice. The computer industry, still largely unregulated and not heavily unionised, has used its ability to move quickly in the marketplace to survive and grow. That has sometimes left good labour relations in the wake.

A dispute between Electronic Data Processing and its newly unionised staff points to the difficulties that can arise when companies do not clearly impress on their workforce that they, as well as the company, will benefit from rapid adaptation to change. Companies which ignore labour relations provide rich territory for union recruitment activities.

Trade unions came into existence to counter-balance the power of large companies — companies which typically dominate stable markets, and can afford to be slower afoot in reacting to change. The trade unions' role in dealing with young, high growth companies needs to be carefully thought out.

It is all very well for the Association of Scientific, Technical and Managerial Staffs, which is representing the EDP staff in the dispute, to seek to "educate" the company in good industrial relations practice. But in the same breath that ASTMS national officer says that he only wants to make EDP understand the law as it applies to labour relations, he adds that he regards recourse to the law as a "fallible back-up" to industrial action.

ASTMS regards the EDP case as a "significant dispute", and it clearly intends to turn its guns on smaller companies. One must question the rationale of using a canon to shoot a fly. EDP must look closely at its labour policies, but ASTMS must look at its own negotiating and disputes procedures to ensure that it has a balanced and effective method of dealing with small and nimble high technology companies.

1984 and all that . . .

THIS week's example of the strange things people say about computers was sent in by R. Cooper of Aldershot, Hants, who writes:

"...but servers may well soon be a thing of the past as micro chips take over much of the dirty work."

LETTERS

Talk to councils in search for a site

AS a councillor in local government, your editorial (CW, May 20) struck home to me. I can appreciate your concern regarding planning authorities, but the fault does not rest entirely with us.

I, too, am concerned at the frustration that is being experienced by the computer industry, and offer the suggestion that firms talk to their local council about their problems; the officers are professionals and give willing advice when jobs and rateable value are at stake.

My own Council of Rochester-Upon-Medway City is desperate to

attract industry into the area. I am sure that they would listen to any request for sites or land.

The Medway area stretches down the A2, straddling the River Medway: it is a port, has a small airport, is bounded by the M2 motorway, has good communication with Gatwick airport, and fast electric trains run to London and the South Coast.

Thorn, Marconi-Elliott, CAV-Lucas, Facit, and other science based firms are there. HM Dockyard is scheduled to close, throwing up an abundance of skilled labour, including electronic

and computer personnel, who I am sure would rather stay in the area if there was work available.

Readers of Computer Weekly who are looking for an understanding council with sites or land available, please write to me and I will personally present your case to my council.

C. W. HAZELL
Councillor

Rochester-Upon-Medway
City Council Offices
Frindsbury Hill
Strood, Rochester
Kent, ME2 4HR.

'Sponsor teacher re-training' appeal

PHILIP HUNTER's article (Programmer Page, CW, May 13) on the CMG report and John Barnes' (SPL) reaction, seemed to reflect a number of half-truths. It seems clear that CMG has not clearly foreseen the effect of the new generation. This will depend on an open-minded creative approach which will not be a result of "set theory" or Basic. Both of these

tend to stultify the children and dim their wits if stressed, as they often are, as ends in themselves.

Teachers today have a great responsibility because it is easy to see the enthusiasm of young people when computers are studied.

One major problem is evident: few teachers have any training in computing. The Computer Education Group has urged institutions to put on such courses and published appropriate guidelines. Several courses now exist. There is one in London at South Bank Polytechnic, one in Scotland at Paisley College of Technology, one

in Northern Ireland at Ulster Polytechnic, and at my own institution in Leicester.

This is a small but welcome start. I would like to invite major computer firms to sponsor teachers on such one-year in-service re-training courses.

Anyone wishing to sponsor a school-teacher fellowship at Leicester Polytechnic, should contact me and I will discuss all the details with them.

Professor D. E. CONWAY
School of Mathematics
Computing and Statistics
Leicester Polytechnic

Commodore tests severe

GUY KEWNEY in his letter (CW, May 13) implied that Commodore approved the CP/Maker as a way of adding CP/M to a Pet because it receives a royalty from us or our UK distributor, Tamsys.

It is indeed true that Commodore will receive a certain royalty in exchange for printing details of our product in its "approved" catalogue, for carrying out extensive approval procedures, for assisting us in many ways: technically, promotionally and by lending us equipment from time to time.

This is normal practice. It should be noted, however, that before agreeing to put any product in the catalogue, it subjects it to rigorous testing of a critical kind. One of our cards was with Commodore for several weeks and it tested both the hardware and the software.

Rather than criticism, Commodore deserves congratulations for providing a valuable service.

G. WEINER

Managing director

Vector International

Leuven, Belgium.

Rapid climb

AN article (CW, May 6) entitled Systems Builder Climbs from Nought to £1m in Two Years was inaccurate in one major respect. Darkcrest does not have — and never has had — an OEM agreement with Digital Equipment and the company is not a Digital Equipment OEM.

MARCUS PALLISER
Public Relations Manager
Digital Equipment,
Reading, Berks.

Relevant advertising?

I SHOULD like to comment (in fact complain) about the style of advertising in Computer Weekly (May 27).

Why does Computer Search feel it necessary to announce the vacancies of network team leader and co-ordinator beside a pair of female legs in suspender and fishnet stockings? Does Computer Weekly really think this is a valid style of advertising?

Since shapely legs and stiletto heels seemed to be absent from the job description/requirements, I can only assume that such an illustration was there for the (sexist) purpose of titillation.

Advertisements like this not only insult many of their readers, but work to reinforce the attitudes of patriarchy; and that we are certainly better off without.

MUFFY THOMAS (Ms)
Department of Computational
Science,
University of St Andrews,
Scotland.

Liveware File

by Don

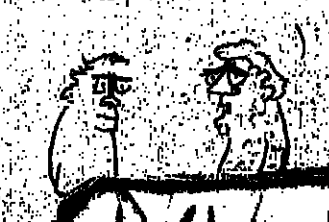
MY SON'S DRAMA
COURSE SEEMS TO
HAVE CONFUSED HIM...

...I FOUND HIM
RE-WRITING ONE OF
MY PROGRAMS THE
OTHER DAY...



...WHEREVER I'D GOT
A GOTO COMMAND...

...HE'D INSERTED "FIE
UPON YOU" AND THE
RUN ABORTED!



BBC Radio 4

DOWNTIME

Behind closed doors

ENGLISH seaside resorts have never been noted for air temperature much above 50 degrees Fahrenheit, a surfeit of sunshine, or providing a ready market for solar heating salesmen.

Eastbourne in May is no exception, and delegates at the ICL Computer Users' Association were therefore excused the painful decision whether to attend the presentations in the Victorian splendour of the Grand Hotel, or to place knotted conference programmes on their heads and relax on the beach.

Thus ICL supremo Robb Wilnot was assured of a full house for his state-of-the-company address. The house would have been even more full had not Europe's leading computer company decreed that Chad was persona non grata at

Robb's presentation.

So, while the assembled multitudes gaped in awe as Wimbledon's favourite son whipped through 61 overhead projector slides in 55 minutes, your humble reporter was forced to remain unwatched in the conference organisers' free bar.

The time was not wasted. Chad made two new friends — an ICL personal computer, and a bottle of White Horse whisky.

As if by magic, at the very moment when Wilnot finished his dissertation, the rain stopped, the grey clouds parted, and the sun streamed through the Grand's elegant windows.

If the man can make the sun shine in Eastbourne, ICL should have no trouble in ousting IBM from the World No 1 slot.

Cycling into the beyond

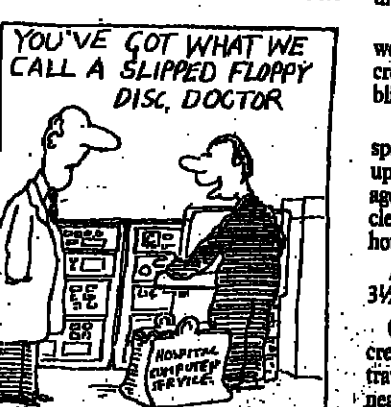
USERS of Starlink, the computer network for astronomers, can claim expenses under certain conditions for travel to their nearest site. One of these conditions seems rather strange — the nearest site has to be outside cycling distance.

Since the rule does not make clear how far cycling distance is, I had better give you my guideline, based on the observation that practising Roman Catholics used to be excused having to attend Sunday Mass if their nearest church was beyond walking distance.

Now a comfortable cycling speed, assuming a mean gradient up or down of one in 50, an average three-speed touring bike, and a clean bill of health, is 14 miles an hour.

A comfortable walking pace is 3½ miles an hour.

On this basis I issue Chad's decree: Starlink users may claim travelling expenses when their nearest site is more than 12 miles distant.



Priestel in action during the Pope's visit.

Holy wars erupt

A FORTNIGHT ago I told of Priestel, the viewpoint service set up to warn the Pope that glaring at him from the side aisles of his public meetings would be the Reverend Ian Paisley.

I am glad to report that His Holiness heeded the warning. At an open air mass during his visit, the Pope was plagued by Paisley and his adherents howling "No Popery here!" and other blasphemies.

The Pope caught Paisley's eye, smiled and promptly blessed him with the sign of the Cross.

It is said that Paisley needed a bath in carbolic acid after that to exorcise the papal stink.

Whale of an image

I KNOW we live in an age of lookalikes, but I was unaware that it had spread to the type of print used for company logos. Until yesterday that is, when I noticed the acronym BLEN adopted by Electronic Services of Henley.

The odd thing about it is that the letters are printed with the same blue lines as IBM uses.

A careless glance at BLEN's publicity material, and you think you are reading literature from GBW (the Great Blue Whale).

GBW's swim in the ocean of information technology is clearly aided by guidance from pilot fish like BLEN.

What an exhibition!

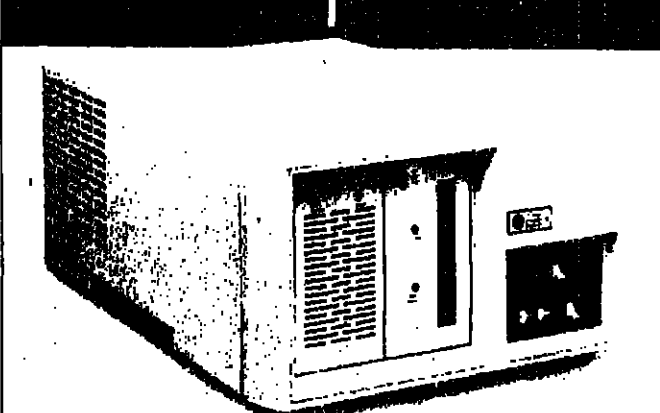
TEN score of men and women exposed their bodies in the centre of Hannover in a display of unparalleled naked aggression against an exhibition of electronic weapons. I for one was shocked that a display of inert gadgets could elicit such emotion.

But an often-with protests, the exhibition was only a catalyst. The aim was to secure the release of four protesters arrested at a previous demonstration.

Or perhaps the Germans were merely fulfilling the old Byzantine proverb: The fanatic redoubles his effort on forgetting the aim.

Chad

More features lower prices



System 23 with Winchester

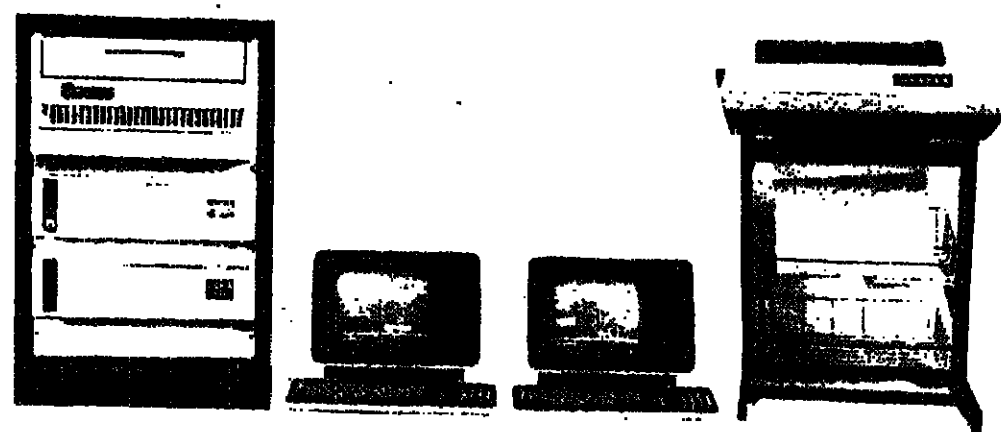
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PROGRAMMERS PAGE

John Gurd of Manchester University helped develop a Fifth Generation computer using the dataflow technique

New techniques mean new thinking for programmers

THE race is hotting up to provide the hardware and programming languages for the fifth generation of computers.

It looks likely that fifth generation machines will embrace some sort of parallel hardware architecture such as we already see implemented in crude form 370, large mainframes like the IBM 370, and supercomputers like the Cray 1, and the Control Data Cyber 205.

Parallel hardware will only work at optimum efficiency if it is programmed in languages designed to exploit it, rather than in present-day sequential ones. The implication is obvious: programmers will eventually have to pull up their roots and sow new seeds.

Parallel hardware aims to speed up the execution of individual programs by processing simultaneously those parts that do not depend on each other for an intermediate result.

One approach to parallelism is the dataflow technique being developed by the team at Manchester University led by John Gurd and Ian Watson, and funded by SERC, the Science and Engineering Research Council.

A dataflow machine is driven by the data, rather than by sequential instructions which fetch and dispatch data items from core and reassign locations within core. Data flows through the machine, moving at once to the location at which the next operation is to be performed.

Dataflow machines need new data-driven languages which express relationships between variables, and which reject the traditional von Neumann approach of executing instructions one at a time through sequential memory access operations under the control of a program counter.

The Manchester team is building a dataflow machine to test data-driven programming languages and operating systems designed for the new hardware. A prototype of this machine will be discussed briefly at the fifth generation conference to be held at the Royal Garden Hotel in London early next month.

Gurd and his colleagues have been promoting dataflow for large technical applications such as weather forecasting, but the Japanese, who conceived the idea, have identified it for a mass market.

According to Gurd, current attempts to exploit parallel hardware, as in the Cray 1 supercomputer, suffer from the fundamental weakness that they are based on traditional programming, which in turn is based on the idea of executing instructions one by one.

Because the program itself tells the computer when to hire and fire data from peripheral input devices, there is at once the problem for the programmer of organising his data accesses efficiently.

A simple way of making parallel hardware is to link processors together. Such an expedient, seen in the ICL DAP, is cheap, and can achieve impressive results. But programs have to be painstakingly partitioned manually.

Multiprocessors operate sequentially under a program counter. But there are often many program counters picking their way through subprograms simultaneously, posing nightmare communications problems.

Apart from this somewhat in-

formal link of processors, there are two parallel hardware structures in current use: the pipeline and the parallel array.

The pipeline gives speed through overlapping — many different things are going on at once. It consists of a series of stages, each dedicated to a given task. In theory, a pipeline will at any instant have as many jobs running through it as there are stages.

In a parallel array, many identical or similar actions are going on at the same time. These are ideal for performing operations on vectors of elements when the job can be split into many equal identical parts.

The parallel array is slow, but delivers whole batches of results at once. The pipeline is fast, but delivers results only one at a time in machine gun-like succession.

The two processes work well in harness therefore, and this is seen in most present attempts to offer parallel hardware. The Control Data 6600, for example, uses a pipeline to fetch and decode tasks, followed by a parallel array of two adders, two multipliers, a shifter, and a divider.

The trouble with both pipelines and parallel arrays is that they rarely achieve their full speed. The irregular nature of most programs means that pipelines usually have empty stages, and parallel arrays are effective only with similar operation.

Dataflow is an attempt to exploit fully the capacity of the central processor by filling it with data at various stages of execution. It sprang from the realisation that hardware and software would have to develop together, rather than each going its own way based on sometimes conflicting concepts.

Dataflow machines such as the prototype now working at Manchester consist of networks of nodes, each of which performs a certain operation. Data circulates in packets of information which consist of a value, and a token to indicate the node which contains the instruction for executing the value.

The prototype has just one ring made up of five processors in series. Gurd points out that in two years' time the SERC machine will possess four complete dataflow rings operating in parallel.

The five processors of the ring are the switching unit, a token queue, the matching unit, node store and processing unit.

The switching unit controls the flow of data packets from the input/output unit, and the circulating dataflow system. In the case of the Manchester prototype, the input/output unit is a conventional computer, a Digital Equipment LSI-11, which has all the standard peripherals including a telephone link to external mainframes.

The token queue is a first in, first out buffer for the data packets with their tokens. It accepts the packets from the switch and feeds them on to the matching store.

The matching store is the most critical part of the system. It marshals data packets with the same tokens, and sends them to the same node.

When all the data packets destined for a particular node have arrived, they may have an arithmetic operation performed on them, such as addition. Or the node may order one of two actions according to the value of just one.

data packet — in other words the equivalent of a simple IF type statement in a high-level language.

The node store accepts the clusters of data packets ordered according to their destination node from the matching unit, and constructs an executable program for the processing unit.

In the prototype, the processing unit is built for maximum flexibility, and consists of a pipeline and a parallel array of processing elements. The pipeline performs fast operations such as a collection of performance statistics, a vital part of any hardware prototype. The processing elements perform the hard number crunching.

Gurd demonstrated the prototype to me on a program to calculate the factorial of the first 700 numbers — that is, all the first 700 numbers multiplied together. The execution time fell in proportion as additional processing units were linked in, so providing a perfect

example of the benefit of parallelism.

The algorithm used demonstrates the kind of thinking programmers will need to use to exploit parallel hardware. Here it is in pseudo-code:

```
1 FACN = FAC(1,n) WHERE
2 FAC(X,Y) = Y IF X = Y
3 ELSE FAC(X,Y) =
  FAC(X,Y/2)*
  FAC(X+Y/2+1,Y)
```

The * in line 3 indicates that the two FAC functions are to be multiplied together.

The point of the algorithm is that it continually splits the problem into two, until it is multiplying sets of adjacent numbers. Then the recursive calculation shrinks back, piecing together the fragments until it arrives at the one number which is the finished result.

Algorithms to best exploit parallel hardware will have to be capable of being split in this way.



GURD... Users dissatisfied with current vector array processors.

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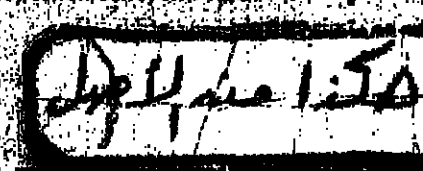
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(Application not accepted after 1st July 1982. Post latest return to exhibitors.)



PUZZLER

AN athletically-minded systems analyst decides to carry out "trials" at the Underground station near his office. One machine he walks down the moving descend- ing-escalator at his normal pace, one step at a time, and takes 50 strides to reach the bottom.

Next, having returned to the-

top, he runs down the escalator three times as fast as he walked (once again taking one step at a time). At this greater speed the number of strides taken to reach the bottom rises to 75.

How many steps are showing on the escalator? See page 46 for solution.

PEOPLE

Baric MD appointed after meteoric rise

BARIC Computing Services has appointed Chris Gent managing director. It was a swift climb to the top for 34-year-old Gent, who joined the ICL/Barclays Bank owned company three years ago. Gent has also been made a divisional director of ICL.

Gent started with Baric as market development manager and promotion to manager of strategic sales and later product marketing

manager followed. In his role as product marketing manager, Gent took responsibility for defining and implementing the company's market direction after the launch of its nationwide computer services.

Former Baric MD Keir Hopkins was appointed manager of ICL's applications systems division in March, and Gent has been acting general manager since then.

Nexel promotion

NEXEL, the company formed to take over the service business previously done by Nexos Office Systems, has a financial director. He is Tony Morgan, a chartered accountant, who worked for 10 years with Touche Ross latterly as manager of the Bristol audit department, before joining Nexos as financial controller two years ago.

BEAMA chief

THE British Electrical and Allied Manufacturers Association, BEAMA, has elected Gordon Gaddes as its elected director. Gaddes is the British Standards Institution's director-general, to succeed Kenneth Edwards. Edwards has become deputy director-general at the CBI. Gaddes is the BSI's director of information services, marketing and resources.



Hans de Lange has been named general manager of Rair's French subsidiary Rair SARL. He has acted as an independent European advisor to French and UK computer companies for several years, and has also worked for Burroughs for eight years - one year based in Saudi Arabia and seven in Amsterdam as Burroughs' branch manager. Rair has companies in the US, UK and West Germany as well as the new French subsidiary. One of de Lange's first tasks is to recruit more sales and sales support staff to handle and boost current French sales of about 20 Black Box microcomputers a month.

NCC man for IT city

ERIC BIRD has been appointed manager of the Milton Keynes Information Technology Exchange. Bird was with the National Computing Centre for ten years, where he served as head of education and training, director of the NCC Threshold scheme and manager of the microsystems centre. He served on the Manpower Sub-Committee of the NEDO Computer Sector Working Party from 1979-81.

The Exchange, which is to open later this year, is designed as the centre of a plan which is aimed at making Milton Keynes "the leading city in Europe for the introduction of IT as an integral part of the business and domestic life of the community".

It is to act as a focal point for the business community, providing information, training and a retail outlet for technology related products.

Football

Summer Computer League

North Division I				Datapoint				Prov Life			
Gryphon A	13	H'hikers	0	ACR	8	ICLA	0	Forest	1	Bissell	6
Kingston's	0	SBS	3	H'hikers	3	Bissell	6	Forest	1	Bissell	6
ICLA A	1	Memnoll	3	North Division II							
Bissell	4	Ashbourne	4	ICLA B	1	William Pitt	3	Forest	1	Bissell	6
Forest	1	Datapoint	3	UDT	5	SCS	1	Prov Life	1	Bissell	6
Prov Life	1	NCR	2	Logica Barnet	0	Benham's	7	SBS	3	Gryphon A	0
SBS	3	Gryphon A	0	Apex	2	Old Palace	5	Memnoll	4	Kingston's	3
Memnoll	4	Kingston's	3	Logica	2	Gryphon B	9	Ashbourne	2	Forest	1
Ashbourne	2	Forest	1	ICCH	2	Sperry Univ	5				

Cricket

CW v Logica CW won by 7 wickets

Sam Samuel, previously a product specialist with Modcomp, has joined Rank Data as service manager. Sales executive Mike James has also joined Rank Data, from Perfec.

Eric Cole has left Data Recognition, where he was

national sales manager, to join DKS as an OMR system sales executive.

Bob Dunn has been appointed sales manager for Distributive Computer Systems of Coventry. Previous experience includes 10 years with Honeywell.

Ray Pasqualone has been named vice-president of operations at the peripherals division of Perfec. He joins the company from Clairmont where he was VP of operations.

Patric Curwen, who until recently was with Logica VTS where he managed various projects in the Office of the Future operation, has joined CAP as office systems group manager.

Paul Freezer has become a senior sales engineer with ATS Telemetry. He was last with Cosor, where he played a leading role in the development of micro-based telemetry systems.

Nick Marshall, previously a sales manager with Control Data, has joined CTL as a senior sales executive covering Greater London and Essex.

Alwyn Jones of the City University Business School has been appointed deputy dean.

Don Crowle has been appointed sales executive for Greater London with Intergraph. He joins the company from Computervision, where he was a corporate accounts executive. Roy Tomlin is Intergraph's other new sales executive, and he will cover the Northern Home Counties, the Midlands and the North of England. Formerly he was with Versatec, also as a sales executive covering the Midlands and North.

Bill Winter, until recently operations manager of Westinghouse's advanced technology labs in Baltimore, Maryland, has joined Storage Technology as vice-president and general manager of its microtechnology division in Boulder, Colorado.

Graham Northey has been appointed to the new position of sales manager with Chemiceff Telecommunications. He was formerly responsible for UK sales of line printers and OEM sales of disc drives at Teleprinter Equipment.

Ian Hillier-Brook, previously European marketing manager with Centronics, has joined System Industries Europe as operations manager for Europe.

Manfred Scheurer has moved to Shugart as regional marketing manager for Northern and Central Europe, replacing Wolfgang Schaefer who has become managing director of Synlec. Scheurer was previously Central European sales manager for Zilog.

Mike Gardner has been appointed sales executive with the micro systems division of Newbury Labs. His last job was as manager of the Telecomputing bureau in Oxford.

Henry Montgomery has been appointed to the newly-created post of executive vice-president and chief operating officer with MicroPro in San Rafael, California. He was previously president of his own management consulting firm.

Hoskyns boss

TONY ROBINSON has been appointed managing director at Hoskyns Group. He succeeds Jim Peasey, who in his six years as MD saw the company grow from UK sales of £3 million to anticipated sales of £25 million this year. Peasey is now pursuing other business interests.

Robinson joined Hoskyns in 1967 and has recently been managing director of one of the three trading companies in the Hoskyns group, Hoskyns Systems.

New MAI address

MAI has opened a second Midlands office in Birmingham. Manager is Stuart Smith, who joins from CII Europe as Midlands business manager.

The address of the new office is: Scale House, Holloway Circus, One-on-way, Birmingham B1 1EQ. Tel: 021-643 8117.

DIARY

JUNE 18 Communications - getting it all together. Sir George Jefferson, chairman of British Telecom. BCS: Royal Society, London SW1. Details BCS external relations dept.

JUNE 20 Commercial use of API and achievements. UK API User Group. Details G. Sutcliffe 01-788 7272 ext 2715.

JUNE 23 Visit to the Midland Railway Trust. BCS Nottingham Group. Details Ray Fowler on Nottingham 415415 ext 4725.

JUNE 26 Petnet and Pet computer networks. BCS Sussex Microcomputer Group. Meeting Room, King and Queen, Marlborough Place, Brighton. 7.30.

JUNE 27-JULY 2 Computer-aided design of filter networks. Second IEE vacation school at University of Essex. Details IEE, 01-240 1871.

JUNE 28 Local area networks. BCS WP&CA SE branch. United Reform Church, Small Hall, Addiscombe Grove, Croydon. Details Sunley Highway 66-35925.

JULY 6 Briefing expert systems. Edward Feigenbaum. BCS Expert Systems Group/SPL. Royal Garden Hotel, London. Details SPL. Fifth Generation Computer Project 0235 24112.

JULY 6-9 Man/machine systems, international conference. BCS/IEE-UM.

JULY 7-9 Second British national conference on databases. BNCOP-2 ICS/Universities of Aberdeen and Bristol. Bristol University. Details Dr M. J. R. Shave 0272 24161 ext 846 (mornings).

JULY 7-9 Fifth generation international conference. BCS Expert Systems Group/SPL. Royal Garden Hotel, London. Details SPL 0235 24112.

JULY 15 Auditors' brains trust. EDP Auditors' Association Inc. Little Ship Club, Bell Wharf Lane, Upper Thames Street, London EC4 5.00.

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COMPUTASTARS - SECOND LONDON HEAT

by Andrew Thomas



Rank Xerox - poised to take second place.



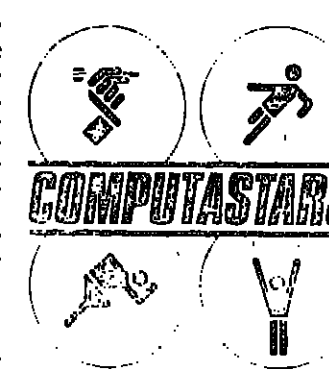
Gerry James sprints Rank Xerox towards a commanding lead.

Sun shines on the capital as Ford and Rank Xerox blaze to victory

AN untypically hot and sunny Bank Holiday Saturday was the setting for the third 1982 Computastars heat at Barnet. This was an overflow heat, added to the programme to accommodate the large number of London area computer departments wanting to enter the annual 'DP Olympics'. As such it involved only 16 teams, but the competition and the volume of the supporters were well up to standard.

The javelin put in its first 1982 appearance, and supplied me with my most hazardous assignment to date - standing in the danger zone to supply action photographs. John Watson, Number One of the London Borough of Barnet 1, put in an excellent performance on his home territory, winning the individual event and helping his team to victory.

In the women's competition, Rank Xerox beat the Bank of England into second place by a convincing margin of 40 points to 23. Bank of England Number One Anne Terry also took the individual lead after the first event.



Sponsored by Computer Weekly

Also seen for the first time this year was the rugby relay. This event would take most of this page to describe accurately, so suffice it to say that it involves a lot of kicking, catching, cursing, carrying and confusion.

Ford 1 displayed either the greatest degree of skill or luck, narrowly beating Logica 2 into second place, with Barnet 1, Rank

Xerox and Gonzalez Byass tying for third. The women from Rank Xerox beat Bank of England by 45 points to 30, and Gonzalez Byass women showed that rugby was not really their strong point, scoring just six points.

Golf, however, proved to be more to their taste, the team beating Bank of England and Rank Xerox into second and third places respectively. Karen Standing, Number One of the victorious Gonzalez Byass team, also won the individual competition.

Best male golfers were Ford 1, but Logica also appeared to spend a considerable amount of time on the greens, taking second and third places with its two teams. Logica 2's Number One Philip Edge, was best individual puttsman.

Jumping sideways across a board in a temperature of 75 degrees is not one of the most relaxing pastimes, but Rank Xerox gritted its teeth and beat Wimpey into second place by the slender margin of one point, the Wimpey men's best performance of the day.

Xerox's Number One Kartar Davatwal, was best individual jumper. Xerox women duplicated both their male counterparts teams victory and individual success.

Ford 1 proved to be the driving force in the men's 100 metres, beating joint second placed Logica 2 and Bank of England 2 by a six-point margin. Bank of England Number One David Vorberg gave everyone a good run for their money to take the individual lead over Grant Mansfield of Ford 1.

One Anne Terry again took the top placings in the women's heat. The team and individual placings in both the men's and women's competitions after five events were to remain unchanged to the end of the competition. Rank Xerox women had a colossal 71-point lead over second placed Bank of England.

By the end of the afternoon, the difference had been stretched to no fewer than 137 points, leaving no doubt as to which women's team would be appearing in the Birmingham finals. Anne Terry took

the individual title despite having to take part in the steeplechase with a pulled muscle.

Ford 1 drove on to victory over the men from Rank Xerox, and Grant Mansfield beat John Watson into second place in the individual competition. Small unit entrant Gonzalez Byass also goes to the final (nothing at all to do with its presentation of Champagne to each team), as do the veterans of Barnet 2.

Photography can be dangerous...

MEN'S TEAM RESULTS				Points				Total			
Rank	Name	1	2	3	4	5	6	7	8	9	10
1	Ford Motor Co 1	24	45	33	30	41	45	36	35	289	
2	Rank Xerox	26	36	22	27	32	42	28	34	257	
3	London Borough of Barnet 1	30	37	18	15	27	36	25	32	228	
4	Logica 2	14	42	29	18	18	27	36	25	218	
5	Logica 1	15	21	30	24	36	30	26	26	212	
6	Arthur Anderson	10	21	29	29	29	29	29	26	206	
7	Gonzalez Byass (S)	21	36	22	25	27	36	25	23	205	
8	Wimpey	21	36	22	25	27	36	25	23	196	
9	Bank of England 2	21	36	22	25	27	36	25	23	174	
10	Samuel Montagu	20	30	20	27	34	12	22	9	169	
11	Samuel Montagu 2	22	12	24	19	28	21	21	26	173	
12	London Borough of Barnet 2 (V)	18	12	27	20	27	16	33	17	169	
13	Ford Motor Co 2 (V)	23	12	27	20	27	16	33	17	166	
14		24	6	23	17	19	6	16	15	126	

MEN'S INDIVIDUAL RESULTS				Points				Total			
Rank	Name	1	2	3	4	5	6	7	8	9	10
1	Grant Mansfield (Ford 1)	8	15	13	11	13	15	15	14	104	
2	John Watson (Barnet 1)	15	7	10	12	9	12	13	13	96	
3	Kartar Davatwal (Rank Xerox)	10	12	10	15	12	13	13	13	93	
4	Philip Edge (Logica 2)	8	14	14	8	9	7	13	15	88	
5	David Bennett (Gonzalez Byass)	8	12	12	11	8	12	8	7	77	
6	Paul Stephens (Logica 1)	6	4	14	6	12	7	5	13	67	
7	Steve Murray (Samuel Montagu)	8	10	10	9	15	4	5	5	66	
8	Alanin Ellison (Arthur Anderson)	3	7	7	7	11	10	9	6	64	
9	Robin Hale (Samuel Montagu 2)	5	6	11	12	34	21	23	26	62	
10	David Grant (Ford 2)	11	2	14	6	7	2	6	7	55	
11	Victor Ives (Barnet 2)	7	4	9	5	7	7	6	5	50	

WOMEN'S TEAM RESULTS				Points				Total			
Rank	Name	1	2	3	4	5	6	7	8	9	10
1	Rank Xerox	40	45	15	42	38	45	39	29	293	
2	Bank of England	23	30	21	10	25	16	25	16	156	
3	Gonzalez Byass	20	6	27	18	32	6	18	21	148	

WOMEN'S INDIVIDUAL RESULTS				Points				Total			
Rank	Name	1	2	3	4	5	6	7	8	9	10
1	Anne Terry (Rank Xerox)	15	15	9	15	12	15	9	2	90	
2	Karen Standing (Gonzalez Byass)	13	2	10	15	10	7	12	15	90	
3	Karen Polden (Bank of England)	6	10	8	2	11	2	9	9	57	



Anne Terry jumps towards first place in the women's individual table.



Ford's Grant Mansfield - second in the men's individual table.

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If you use a DEC, DATA GENERAL, HEWLETT PACKARD or any other Minicomputer and wish to connect to remote terminals - then this Seminar is for you.

The aspects of data communications most relevant to the Minicomputer user are presented in layman's language.

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COSTS: £46.00 inc. VAT (includes refreshments, lunch and seminar handbook).

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PRODUCTS

New-breed terminal table

THE Martela-Conti terminal table has been developed for the new breed of low profile word processor and computer keyboards and VDUs.

Designed to be used in conjunction with the standard height Conti desk range, the height of the keyboard table is adjustable between 60 and 76mm, with further variations available for the screen table level and angle.

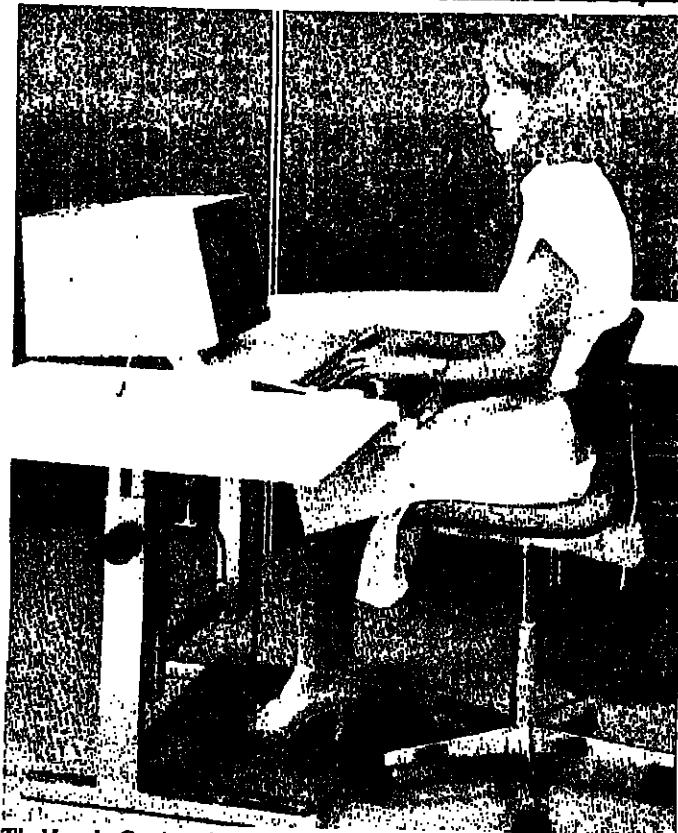
Extra work areas are available and are simply bracketed to the main unit.

Unique construction features substantially reduce vibration and noise transmission, says Martela.

Conti terminals are finished as standard in white or cream and are on immediate delivery. Wood finished surfaces are available to order.

Prices start from about £165 for a totally integrated terminal and desk system.

Martela Contract Interiors, a subsidiary of Martela Oy of Finland, offers a wide colour range, and a complete office design and



The Martela-Conti terminal table.

Training system features colour and graphics

INTELLIGENT Systems, manufacturer of colour graphics computers and terminals announces CATS-80, its computer augmented teaching system. The product is aimed at the educational and industrial training markets.

Product manager Peter Curnin says, "These markets have been seeking a system which combines ease of use, effective instructional methods and low cost. CATS-80 satisfies these requirements and adds the instructional power of colour and graphics."

A typical course written on CATS-80 presents information to the student in any of several formats. A "Preset" presents the materials to be learned, asks questions and supplies answers. A "Review" utilises the branching capabilities of CATS-80 to present information based on student response to questions.

If a student successfully answers questions on the material presented, the course branches to new information. If the student is not

successful, the course repeats information and questions or branches to a remedial mode. Three test modes "Quiz", "Test", and "Final" select questions randomly on previously-presented material.

Curnin believes that "virtually any subject is suitable for presentation through a CATS-80 course, from foreign language to geology to electronics. And courses are easily written even by first-time computer users."

Intelligent Systems is offering a special author incentive programme for prospective course authors to buy a complete CATS-80 system for \$2,995. The system includes the 3651 colour graphics microcomputer, 32K memory, the CATS-80 authoring software with documentation.

CATS-80 is available within 30 days of order.

Intelligent Systems Corp (CW), 225 Technology Park, Norcross, GA 30092. (404) 449-5961.

Controlled camera

A COMPUTER controlled camera system for automatic production of 35mm slides and prints from colour or monochrome digital images is introduced by GDS Graphic Display Systems.

The GDS-1700 Auto takes the Nikon F3 camera mounted behind an optical hood, pivots to the display, with camera motion under computer control through a camera interface with triggering designed to suit the user's specification. Cameras other than the Nikon F3 can be accommodated on request.

Application areas include research and CAD/CAM.

Graphic Display Systems (CW), 76 Hemingford Rd, Cambridge CB1 3EZ. Tel: (0954) 210466.



STC's Tele-check card authorisation terminal.

Self-checking electronic funds transfer device

TELE-CHECK, the company's second generation electronic credit authorisation terminal, has been announced by Standard Telephones and Cables. It deals with the charge, credit or bank cheque cards of up to 10 card companies, incorporates a normal telephone with rotary dialling and automatic re-dial, and is self-checking by means of a built-in diagnostic program.

For credit authorisation a card is passed along a slot at the rear of the Tele-Check unit, the amount of the transaction is entered on the keyboard and the "proceed" button pressed. The unit reads the magnetic stripe on the back of the card to identify the database and the individual account, and automatically dials the host computer or authorisation centre.

A 32-character display on the unit shows the required operator action at each stage.

Where the magnetic strip is damaged or absent the embossed card data can be read by the operator and entered via the keyboard. The unit has an automatic sequence check for the keyboard entered data.

Seconds later, the response from the computer or authorisation centre appears on the display and will normally be an instruction to complete the transaction.

If the computer decides the personal assistance is needed for the authorisation centre, the unit will automatically dial the appropriate number and connect the user to the handset of the integral telephone.

Features of Tele-Check include full alphanumeric data entry, and editing on some local input data. Standard Telephones and Cables (CW), 190 The Strand, London WC2R 0AL. Tel: 01-405 8055.

Text storage costs cut

A TEXT store module for the Series 5000 range of high resolution raster graphics terminals and OEM generators is announced by Sigma Electronic Systems.

Text store modules are interchangeable with pixel stores allowing the user to configure a terminal or generator with the graphics/text mix to suit the application. Previously users have had to use up valuable pixel store for text display tasks, thereby reducing the cost-effectiveness of the unit.

Sigma Electronic Systems (CW), Sigma House, North Heath Lane, Morham, Sussex RH12 4UJ.

Intelligence for Micropad

AN addition to the range of Micropad hand print data entry terminals has been made with the introduction of the Micropad Intelligence.

This enables the user to produce documentation by the Micropad within the unit without any need for programming skills. Any number of input forms can be generated, stored in the Micropad and called up by the user.

Micropad prices start from £395 with various optional features available; intelligence costs £100. Quest CIE (CW), 100 The Strand, London WC2R 0AL. Tel: 01-405 8055.

SOFTWARE MONTH

IN April Digital Equipment, DEC, announced a scheme to assist third party software suppliers to sell to users of DEC hardware. It also set up a directory of applications software called Digital Classified Software.

But some independent software suppliers have been selling successfully into DEC's customer base for a number of years without the benefit of such a scheme.

Wootton, Jeffreys and Partners, for instance, saw a gap in the market created by insufficient facilities on the RSTS/E operat-

DEC software takes new direction

ing system, particularly in the case of its file structure. The company's proprietary operating system, Multi-User System for Interactive Computing (MUSIC-11) is a DEC lookalike of the standard operating system for Prime minicomputers, Primos.

Another DEC OEM, Koren Computing, recognised that users faced a major obstacle if they wanted to move programs and data from one operating

system environment to another on the PDP-11 minicomputer range as a result of DEC's philosophy of providing separate operating systems to cater for specific market sectors. Koren's IPL-11 Interprocessor Link handles asynchronous communications over leased or telephone lines between processors.

DEC's commercial strategy in the past decade has centred on vertical market segmentation, but

a change of direction was needed for it to achieve its declared goal of becoming the world's largest computer supplier. The company has had to supplement its own internally developed applications software to make inroads into new markets.

The Digital Classified Software scheme is an extension of DEC's earlier referral policy. Previously a formal association with the software supplier was

avoided. But the new marketing venture entered into by DEC will involve it in evaluating products and the commercial viability of suppliers.

DEC will now actively look for gaps in its software range and look to outsiders to supply the solution. Far from relinquishing control over software development, DEC will be able to determine which operating systems it wants applications to

be developed for. DEC's launch of a new bottom-end 32-bit minicomputer, the VAX 11-730 at a price comparable with the 16-bit PDP11-44, aims to consolidate the DEC user base on to a single operating system, VAX/VMS.

Currently the most widely used PDP-11 operating system for multi-terminal use is RSTS/E, and DEC is wary of attempts by Perkin-Elmer, a rival 32-bit minicomputer manufacturer, to move RSTS/E users to its own machines and single 32-bit operating system.

Applications from newspaper systems to scientific research

DEC minis have a key role in a variety of markets David Casey reports

been the high degree of compatibility maintained over more than a decade. In launching the PDP-11/20 (the 11/15 for OEM markets), twelve years ago, DEC was filling a gap between the 36-bit DEC System mainframes and the 13-bit PDP-8.

Series 8 had become a "mature" product with a finite commercial life: the PDP-11 was planned as the principal revenue earner of the middle and late 1970s.

The PDP-11/20 was not the first 16-bit minicomputer, but it pioneered the use of a single bus architecture (the Unibus) for that generation of machine. An integrated instruction set controlled I/O operations and memory, its 16 address lines enabling it to look at 64 Kbytes of memory.

Second generation PDP-11 machines attacked the mini market at two points: the 11/05 retained the same performance at a lower price, while the 11/35 increased the processing power per pound. Incorporating memory management on the 11/35 supported 18 address lines and access to a memory of 256 Kbytes — a fourfold increase from the 11/20. The impact of the larger memory capacity was not fully realised until

the introduction of significantly cheaper machines. The ubiquitous PDP-11/34 appeared to fill this role.

Production of 11/34 variants will continue even though the system has been discontinued as DEC's front-line mini. For OEM suppliers, however, its replacement would involve extensive redesign of end-user products.

As the workhorse of the DEC mini range, the 11/34 has proved an exceptionally robust machine. Examples of this system operating under the most adverse conditions are legion. Tote Computers — the DP division of the Tote Board — runs 14 11/34s to process gaming stakes on racetracks around the UK. Systems are taken by lorry to race meetings: the problems are minimal. The Tote's only concession to hardware security is running pairs of processors in parallel. A quarter-megabyte of memory is the maximum address space that can be managed on an unmodified 11/34. (In OEM applications, additional hardware extends the memory mapping to two megabytes or more). With a further four address lines, providing access to a total of four megabytes of memory, the 11/70 represented a

significant advance on the PDP-11/45, a high performance version of the 11/35.

For relatively small extra cost, the 11/70 offered cache memory and DEC's Massbus. The Unibus alone had proved inadequate for

the tasks that could be handled on a processor loaded to the capacity of the 11/70: as the size of the memory increased, and further discs and tape drives were added, the Unibus performance deteriorated rapidly.

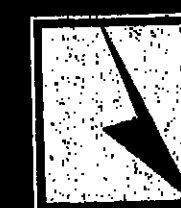
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PORTABLE SOFTWARE FOR DEC OPERATING SYSTEMS

Protect your software investment with these Whitesmiths software based products from Real Time Systems:

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- C cross compilers targeting to 8080 (Z80), 6502, 8086, 68000
- Pascal native compilers
- Pascal cross-compilers targeting to 8080 (Z80), 6502, 8086, 68000
- XA8 cross-assembler targeting to 8080, Z80, 8085, Z8, 8035, 6500, 6502, 6800, 6801, 6803, 6809, 1802, 9900



All products available hosted under DEC operating systems RT-11, RSX11 M, RSTS, VMS as well as UNIX V6/V7, Xenix-11 and, of course, Idris. Whitesmiths UNIX related operating system.

For further information contact Whitesmiths exclusive distributors.

REAL TIME SYSTEMS, Elliott Terrace Workshops, Newcastle upon Tyne, NE4 6UP, England
TEL: 0632 733131 TELEX: 53429 PAGE G

PRACTICAL COMPUTING and YOUR COMPUTER present

THE Northern Computer Fair

Personal computers
Home computing
Small business systems

When the first Computer Fair was held in London in April this year, 38,500 people crammed into Earls Court to see the latest advances in small business and home computers.

Now the sponsors, Practical Computing and Your Computer, are running a similar event in Manchester.

Local computer clubs, software houses and the manufacturers and distributors of personal computers will have the opportunity to meet with the growing number of business users and enthusiasts in the North.

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SOFTWARE MONTH

David Casey reports on the marked shift in DEC's marketing policy, aimed at warding off growing competition

Digital Equipment emerges as a single-source supplier

TURNING boardroom objectives into commercial reality can become a nightmare for a multinational computer manufacturer. The effect of adverse exchange rates and resistance from introspective national governments add to the problems of marketing in a recessionary world economy. When a turnover measured in billions of dollars is involved, subtle changes in local conditions are reflected as seven-figure variations in profits.

A marked shift in Digital Equipment's marketing policy during the past year is its attempt to ward off competition from the major international systems suppliers and the growing number of independents flourishing under advanced technology subsidies.

From its former role as a hardware manufacturer supporting a narrow range of proprietary software products, Digital Equipment is adopting the stance of an integrated single-source supplier.

The acceptance of minicomputers and 16-bit micros as convenient systems for smaller business applications, has brought to the marketplace a different type of purchaser from the DP professional of the 1970s. The new generation of customer, using the computer as just another management tool, demands a total solution from a supplier — every facility from systems analysis to office consumables must be available.

DEC's commercial strategy for the past decade has centred on vertical markets, oriented towards the sale of its hardware. Reputations

were established during that time in key industry sectors.

To achieve its long-term target of being the largest computer supplier in the world, DEC has needed a change of direction. It was recognised that applications software should be developed internally for products which would preserve DEC's share of an existing sector, or make inroads to a new market.

Joint marketing arrangements with independent suppliers are intended to provide access for the company to specialised industry areas. The recent involvement with Ferranti Cetelec in CAD systems on the VAX-11/730 indicates the type of co-operation that the company envisages.

On a second front, closer ties are to be forged with software houses through a scheme described in the UK as Digital Classified Software. As an extension of DEC's earlier referral policy — in which a formal association with the software supplier was avoided — the new marketing venture involves the evaluation of products and their originators.

Mike Wright, UK applications

products manager, outlined the company's approach: "We accept that we cannot offer every item of software required by the customer. But it is equally unacceptable to continue referring users to a third party for these products, when there is a chance that a company might not even be trading tomorrow."

The concept of Classified Software is simple. DEC will take the initiative to identify products for the scheme if a gap exists in its own range, and the company is not prepared to invest in software development.

Wright expects software products to offer a further tier of packages which supplement DEC's in-house products.

Through whichever channel the software is accepted by DEC, the product will be subject to evaluation, with review levels ranging from an overview to a high-level check on functionality and documentation.

Whether the scheme will prove viable will depend on the agreement that DEC can reach with the independent supplier. From guidelines indicated by Wright,

the mechanism appears to be flexible: "While the objective would be to secure exclusive marketing rights worldwide, the contract would have to be negotiable."

Internal software development, and the packages taken up by DEC under co-operative agreements, will indicate the company's product strategy for the next five years.

Within the framework of system software for the PDP-11 range, a definable market exists for independently developed operating systems. The TSX extension to RT-11, from S&H Systems of Nashville, has no direct competition from DEC in a potentially lucrative sector of the market.

Since a basic RT-11 licence is required to handle TSX and its successor TSX PLUS, the product can be viewed by DEC as an OEM package to increase the functionality of its existing systems.

For DEC to promote TSX under any of its joint marketing schemes would negate many of its efforts to standardise RSX-11M as the main-line PDP-11 operating system.

DEC's executive Professional

300 micro series has adopted PDS, single-user version of RSX-11M, rather than RT-11. The range, based on a 256 Kbyte 11/23 chip, is being marketed as a dual-purpose device — functioning as a standalone system and as a distributed workstation. A marketing agreement recently concluded by DEC with Micro Focus indicates that a further target for the Professional is the system development market.

DEC's decision to introduce the new VAX-11/730 supermini at a price comparable with the 11/44 will switch the focus from RSTS/E to VAX/VMS as the general-purpose timesharing system on multi-terminal installations. No less significant is the grouping of the company's Office Plus programme around the VAX-11 range.

Word processing, DP and an information retrieval system are to be supported by typesetting software, and the complete range of DEC's communications facilities. Much of the software development for Office Plus will be the responsibility of independent suppliers offering products under the Classified scheme.

A sensitive response to the needs of its worldwide customer base, both the commercial enterprise and public authority — can achieve for DEC its target of Number One systems supplier. The programme of co-operation with independent suppliers is a step in the right direction, provided that fair and reasonable terms can be negotiated.

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A guide to DEC operating systems

MAINSTREAM RANGE

RSTS/E and CTSS500

RSTS/E is a multi-user time sharing system designed to handle 63 jobs and 124 terminals. Carrying the Basic-Plus run-time system and compiler as standard, RSTS/E supports a wide range of languages, including Fortran IV, Basic-Plus-2 and Cobol.

The system is set up so that each user appears to have the computer dedicated to his application. Provided that the system is not overloaded, time sharing is transparent.

RSTS/E is used extensively in education, as it is extremely secure. It provides total isolation between users and is therefore ideal for the commercial time sharing market.

CTSS-500 is a commercial "packaged" system which combines RSTS/E with appropriate languages and data management software. DEC describes RSTS/E as being "forgiving", i.e. capable of withstanding handling by programmers. This view is shared by Derek Sully, managing director of Turnkey Systems, distributor for the Lexiboss Information Retrieval System. "We can rely absolutely on RSTS/E working. It is probably the most developed of the DEC operating systems. You cannot crash it without trying very hard."

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Ada — good prospect for long-term survival

WE all know that languages like Cobol and Fortran have their faults, but equally we have seen the comparative failure of better languages like PL/I, Pascal and Algol. And now we have another contender — Ada.

It seems that there is something special about Ada. The language has powerful backers, and it is going to save a lot of people a lot of money.

In fact, Ada has a good chance of becoming widespread in the software world, especially for engineering, scientific and real time applications. Indirectly, it will probably make an impact on other people and organisations producing software, such as DP, because package vendors will choose it as an implementation language.

So, what is Ada? Basically, it is two things: a high-level language, similar in appearance to Pascal or Algol 68; and an "environment" — an integrated collection of utility programs which will make the lives of development and maintenance teams a lot easier.

For example, these include a clever text editor, interactive debugger, a file structure and utilities, and a module control or configuration management system.

So far, only the language has been fully defined. It is likely to become an Ansi standard this summer. Dr Lee Blaine, consultant and resident Ada expert at a major defence contractor, describes the current state of play: "Compilers are being written right now, and full compilers should become available by early 1983, including the VAX (mini) and some of the more powerful 6800-based

"And now we are also looking for the world's best Software Designer" Clive Sinclair

The success of Sinclair Research has been astonishing. Their ability to stretch the limits of technology has enabled them, in just three years, to become the world leader in Personal Computers. The company is determined to lead in all aspects of computer technology—from chip design, to displays and radical peripherals, through to highly innovative software.

We are searching for a pioneering software specialist with a wide spectrum of experience of conceiving and implementing high technology software developments from chip architecture through to applications, encompassing micro code, machine code, compilers, translators and high level languages. The person appointed will have an unusual blend of attributes; first and foremost he/she will have the ability to stand alongside the most creative software

designers in the world and, as a result, be the leading authority within the company on software.

If you feel that you genuinely have the ability to accept the challenge of working with some of the foremost computer engineers in the world, and have visionary ideas on

software designs for the future, we must take things further. There are no constraints to this position in terms of either salary or involvement in a company committed to dominating world markets.

To apply for this position, either send a curriculum vitae to Geoffrey King, Managing Director of Cambridge Recruitment, who is advising Clive Sinclair on this appointment, or phone for an application form. Please quote reference SD/S.

sinclair

Cambridge Recruitment Consultants

1a Rose Crescent, Cambridge CB2 3LL. Telephone: 0223 311316.

Freelancers...

...in the North of England and Scotland who are available now or in the near future are invited to contact me, Peter Morris, to discuss a variety of interesting and rewarding assignments throughout the UK and overseas.

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Department of Business Studies

Lecturer 1

In Computing to teach computer programming (BASIC and/or COBOL), data processing and business numeracy to BEC National and General levels. Salary £5,034-£9,868 plus £468 L.W. Further particulars and application form from The Principal, Hounslow Borough College, London Road, Isleworth TW7 4HS on receipt of large S.A.E. Closing date 10 days from appearance of advertisement. (9824)

CONTRACTS

VAX BASIC/FORTRAN (Now)
SNA VTAM IMS CICS SYS PROGS (Now)
DATABASE or COMMUNICATIONS. (IBM USEFUL) (Now)
SENIOR CONSULTANTS (June, July, August, Starts)
UNIVAC 90/30 COBOL IMS (Now)
PRIME COBOL (Now)
COMMODITIES/FUTURES (Now)
ANALYST/PROGS (Aug/Sept)
DATA POINT/DATABUS (Now)
PL/1/CICS/DLI (Now)
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With at least two years' IBM Cobol experience and the ability to communicate at all levels, a young successful services company is offering you the opportunity to:

- Participate in the design and development of on-line database systems.
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- Have considerable user contact.
- Gain personal recognition.
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- Enjoy profit sharing.

For further details, please contact Amanda Barahell, quoting ref: 8111

Lloyd Chapman
Associates

myriad

TEXACO

Knightsbridge Green
London SW1

To succeed in the oil business you need to recognise the benefits of advanced technology. TEXACO uses powerful configurations of computer hardware and software in the world-wide discovery, production, refining and distribution of the most important natural product of our time. New methods of automation are continually being sought. The London installation comprises IBM 4341s running under DOS/VSE, CICS and DLI with one machine having VM/CMS. In addition, the department has access via TSO and IMS to an IBM 3033 under MVS in Germany and extensive use is made of database, on-line and network software.

The plans are to replace the 4300s with a new generation IBM 3080 series machine and transfer all systems to MVS/IMS.

Word-processing equipment is Philips 5002/3 and Data General Eclipse minis are in use for interactive scientific and technical applications. A CASE MSX II message switch processes telex messages around the world. An IBM 3750 computerised telephone exchange is installed in London and two Plessey PDX exchanges are in other locations.

COBOL PROGRAMMERS
WIDEN TO 1000

to £13,000

COBOL PROGRAMMERS
WIDEN TO 1000
to £9,500

COBOL Programmers are needed at varying levels of seniority with a minimum requirement of two years IBM experience on either OS or DOS systems. Knowledge of structured programming techniques, IMS databases or CICS would be a distinct advantage. Successful candidates will join one of several major new projects under development and they will also assist in the support of production systems. After a period of familiarisation, the senior positions also offer responsibility of leading a small programming team.

The successful applicants will join a team of systems programmers supporting the existing software which includes DOS/VSE, VM/CMS, CICS, DLI, SNA, VTAM, RAMIS II, etc., and evaluating/implementing new packages for the U.K. and six other European countries. Candidates should therefore be prepared for some foreign travel. When the IBM 3080 arrives, all systems will be converted to MVS and therefore full training will be provided in the intervening period, making this an ideal opportunity for DOS Systems Programmers to expand their skills. The U.K. use of the machine in Germany is currently supported by the technical group in London.

ANALYSIS
SENIOR ANALYSTS
to £13,000

With a high level of user contact, these outstanding career opportunities are available for people with four to six years previous computing experience, a solid COBOL programming background and who have moved into an analysis and design role. The persons appointed will be responsible for all aspects of major project development from specification to implementation. Previous experience of IMS and/or CICS would be a distinct advantage.

DATABASE ADMINISTRATION
to £14,000

Texaco wishes to appoint two people with experience in designing and implementing database systems and at least one must have a sound technical knowledge of either IMS or CICS/DLI. They will operate in a small team and their main activities will be:

- development and introduction of standards
- database design and implementation
- assuring security and integrity
- application development support
- performance monitoring and tuning
- education in database techniques and data dictionary

All employees are covered by a benefits package commensurate with other major oil companies (contributory pension scheme; 35 hour week; £1.85 per day LVs, etc) and their offices are located close to Knightsbridge underground station and to Hyde Park.

For further information and to arrange an early interview, please contact our consultants, Myriad Appointments, at their London office (01-353 0981).

Myriad Appointments Limited

80 Fleet Street, London EC4Y 1AA Telephone: 01-353 0981, 24 hours
50a London Street, Reading, Berkshire RG1 4SQ Telephone: Reading (0734) 584804, 24 hours

Can you talk English and Basic?

ATARI has a need for a special person to talk to the users of their ATARI 400 and ATARI 800 Home Computers who is personable, used to consumer handling and a micro enthusiast.

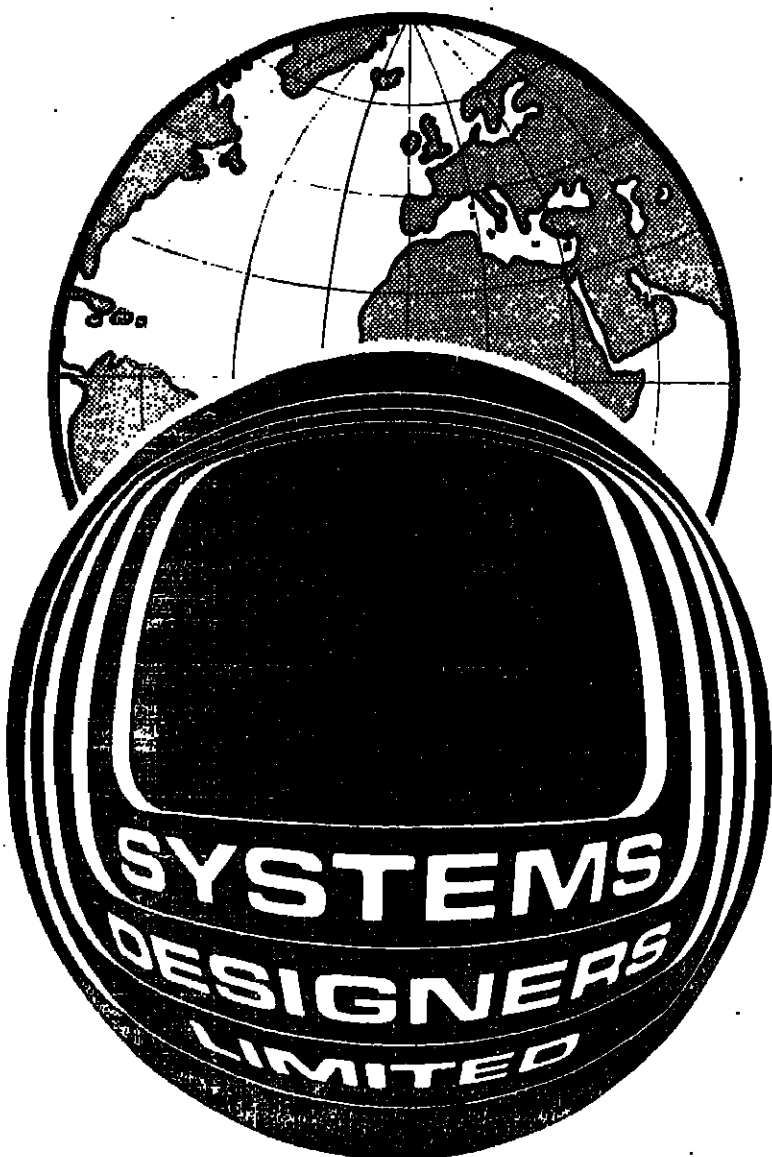
To apply you will need to have 'O' levels in at least Maths and English and probably some 'A' levels. BASIC is an essential whilst ASSEMBLER would definitely be a plus. You will be able to differentiate between hardware/software/user problems and clearly communicate the answers to customers, both face to face and on the telephone. Some travel and exhibition work will be necessary so you must have a full driving licence.

ATARI International is part of Warner Communications Inc., the world leaders in programmable video games and is expanding its operations in the UK from a base in Wembley. Quality, teamwork and innovation is the basis of our success. This is a real career opportunity for an ambitious young man or woman who is flexible and analytic in approach to a very fast changing business environment. Salary will be c.£7,000 plus generous fringe benefits.

If you match our specification write with full career details to: David Konrad, Atari International (UK) Inc., PO Box 59, Alpertown Lane, Wembley, Middlesex, HA0 1EJ.

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Our Information Systems business is growing rapidly. We require professional software staff at all levels: Senior Designers, Project Leaders, Team Leaders, Programmers.

Informal Interviews

will be held at our Camberley Office (adjacent to Camberley Railway Station) from 17.30 - 21.00 hours on

Tuesday 15th June 1982

Salaries from £7,500 - £16,000 p.a. with usual benefits.

The two project main areas are:

1. TANDEM NON-STOP FINANCIAL SYSTEMS

Requiring people with real-time and communications experience and preferably with Tandem experience. There is also an opening for a senior person with IBM communications experience CICS, IMS, SNA.

2. VIDEOTEX SYSTEMS

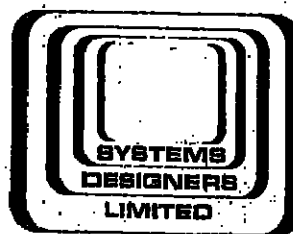
Requiring real-time mini-micro and communications experience including X25 and either VAX/PDP11, GEC4000 or Tandem and 16 bit microprocessors.

Opportunities also exist for work in Europe and North America.

We also have a continuing requirement for programmers and software engineers in our Defence and Industrial areas of business.

If you want a challenging and stimulating job and your experience matches the requirement, our senior staff will be pleased to meet you for a drink and informal chat about your career prospects with Systems Designers Limited.

If you cannot attend but the prospects interest you, please contact Margaret Brown for information on Fleet (02514) 22161 or write to her at:



Systems House, 105 Fleet Road, Fleet, Hampshire GU13 8NZ



David Grove Associates Bank Personnel Recruitment

DEC PDP SYSTEMS PEOPLE ARE YOU MOBILE - INTERESTED IN BANKING?

International Bank requires Programmers and Programmer/Analysts who are willing if necessary to relocate outside London.

Candidates must have a minimum of 3 years programming experience on mini-computers, preferably DEC PDP, programming in AIMS, BASIC+ and/or COBOL. For the Programmer/Analyst positions, practical analysis and design experience is essential, and some knowledge of staff supervision gained in a financial environment.

Applicants should also be prepared to travel throughout both the United Kingdom and Overseas.

INTERNATIONAL BANK JUNIOR PROGRAMMER/ ANALYST

c. £9,000

Prestigious City-based Bank seeks a Programmer/Analyst aged approximately 25 and with previous NCR & COBOL programming experience. Ideally the candidate will have gained his knowledge of Data Processing in banking, or financial applications.

For this post the candidate will need to be a conscientious and enthusiastic worker.

We have many more Data Processing vacancies both at senior and junior level, therefore, for more information about the above appointments and others, please contact BEVERLY COLLINS ON 01-236 7961.

David Grove Associates

60 Cheapside London EC2V 6AX
Tel: 01-236 7961

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We are at the forefront of product development in the field of networking, advanced communications, transaction processing, database, information processing, software technology and system recovery techniques.

We would be pleased to hear from the following experienced people:

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These are all first-rate opportunities, not only for those wishing to spread their wings and take responsibility, but also for those who want to work in an environment that rewards skill, effort and achievement.

Free BUPA, generous relocation, pension scheme, free life insurance and preferential company stock purchase plan are all part of our comprehensive package.

If you have experience of a mini or mainframe system environment and are looking for career advancement, contact Debbie Teague on 0234 65121 or write to her at Prime Computer, Research Development and Engineering, The Merton Centre, St Peter's Street, Bedford MK40 2PN.

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WINDSOR £ NEG + CAR

An experienced programmer is required to join our young software house in Windsor to contribute positively towards the development of new commercial systems and the expansion of existing products.

The successful candidate should have at least 4 years' commercial programming experience preferably on BURROUGHS CMS range of machines (B50, B600, B1900).

He or she must be experienced in liaising directly with customers (often non-computer staff) and be capable of managing a small team of programmers.

Applications in writing (including CV) to:
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On: 01-543 4844

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You will be a proven expert in this specialist field. Your task will be to advise and assist on communications software systems. Experience should cover network planning, high and low level protocols, message and packet switching (X.25) and design of data comms. software.

Type of machine not important. Candidates will be mobile and presentable.
Contact Terry Harvey.

Recruitment Consultant

Amersham £ Basic + Commission

Our successful formula of experience, attitude and responsiveness aimed at providing the best possible service to clients and candidates alike has created the need for another consultant to join our team. Ideally you should have computer industry experience. You will be bright and ambitious with a friendly, gregarious nature.

Your success and our continued good reputation will follow from genuine care in responding to clients' and candidates' needs. The hard sell is not our style. You will be given every encouragement to develop your own campaigns, to try new ideas and to apply initiative in building personal contact with your clients.

The work is hard but satisfying. The rewards are high for successful people. If our style of operation appeals to you, please contact Terry Harvey anytime in complete confidence.

Programmers CIS-COBOL

Berks. to £9,000

A highly professional company offering total micro based business solutions is seeking bright programmers. Ideally you will have worked in a CIS-COBOL, CP/M environment on commercial applications. Above average candidates with knowledge of Basic may also apply. These are first class opportunities to join a prestigious company at the forefront of the micro market.
Contact Tim Bridges.

DEC Prog/Analysts

Beds. to £11,000

The working environment, the company and its products all rate A.1. with this client. Experienced RSX11/Macro 11 programmers will enjoy working on applications and systems for computer controlled analysis and measuring instruments. There are opportunities in special systems and standard product development. A physics degree would be useful. Some international travel.
Contact Terry Harvey.

Analyst Twin ICL

Swindon £8,500

Our client is a subsidiary of a national retailing organisation and household name. Preferably of degree standard you will have had 2-3 years commercial analysis experience and will work on the development and maintenance of interesting applications. Non-contributory pension scheme, flexitime working and 4 weeks holiday are just some of the 'large company' benefits offered.
Contact Tim Bridges.

Micro Dev H/W & S/W Engs

Berks. £7.5K to £11.5K

Our client is extremely successful in the manufacturing and supply of intelligent communications terminals. The existing development group is being expanded to provide product enhancement and innovation. Ideally candidates will have a mix of hardware and software skills preferably gained on Z80 or 8080 micros. Bias may be to S/W or H/W. Successful company benefits.
Contact Terry Harvey.

Team Leaders HP3000 Fortran

London c. £10,500

Experienced team leaders are required by our client to lead small teams developing sophisticated enhancements to manufacturing systems for their customers. Ideally a graduate you will have two years experience on the development of mini based interactive commercial systems. Substantial career development potential is offered by this large international organisation.
Contact Tim Bridges.

Micro Graphics S/W & H/W Engs

Herts. c. £8,500

These are technically challenging positions in an attractive growth area of computing. The S/W person will work in-house on specials. Fortran, Pascal, CP/M, 8086 assembler and DEC experience desirable. The H/W person will work on a mixture of in-house specials and customer support. TTL, micro and peripheral knowledge required. Excellent prospects for developing your career.
Contact Terry Harvey.

IBM COBOL Dev/Support

Berks. to £11K + car

Our client is an international company leading the field in the supply of application packages to IBM mainframe users. Seasoned COBOL programmers are required to join the European Technical Support Team. You will work in both a development and support capacity. Very attractive working conditions and benefits are offered by this progressive world-wide company.
Contact Tim Bridges.

Systems S/W Development

Beds. £9K to £12K

A major multi-computer manufacturer is seeking additional software staff to work on a range of development projects. We would like to hear from graduate level programmers who are interested in operating systems, compilers, editors, networking, data management, etc. There is scope for long term career development and wide job interest. Reloc. where applicable.
Contact Terry Harvey.

Micro Opportunities

Bucks. truly £ neg.

A highly successful and established company is moving into the commercial micro business market. A ground floor opportunity exists to evaluate, develop and support hardware software in this area. The product range will include PET, APPLE, SIRIUS and CIPHER. If you have a solid micro background in commercial systems and obvious flair, this is a golden opportunity.
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Technical Support S/W

W. Herts. to £12,500

Take this opportunity to join one of the most successful computer companies of our time. You will need several years technical software experience to include real time, data communications and/or database systems. Analysts with banking or financial systems experience would also be of interest. Your career will be impressed by this client. High salary but no car for City office location.
Contact Terry Harvey.

Systems Consultant

Berks. base to £12K + car

A market leader in systems software is seeking a consultant to service a client base of 15-20 in S. England. Database experience, preferably CICS and ENVIRON/1 and solid commercial applications background required. Dealing with IBM systems you will act within a post sales capacity giving advice, guidance and lectures to customers. Presentation is therefore important.
Contact Tim Bridges.

Design Eng. S/W Biased

Herts. to £12,000

This small R & D team is seeking an experienced programmer/engineer to work on M6800 network of processors used to control sophisticated instrumentation in audio, video and film recorders. Desirable experience from: M6800, 6809, Pascal, Assembler, CP/M, UNIX, MDOS, multi-processors, ICE, digital design, servo-systems and recording industry. Graduate level in engineering discipline preferred.
Contact Terry Harvey.

Applications Eng. Comms.

Berks. c. £10.5K + bonus

A hardware biased position with a requirement for some software understanding. Candidates should have experience in development or support of a range of data comms. products, e.g. modems, multiplexers, data concentrators etc. The work involves technical proposals, network planning and pre and post sales support. Non-contrib. pension. Possible car for senior candidates.
Contact Terry Harvey.

DEC/Motorola Automation

Herts. c. £9,000

There are attractive openings for software and hardware designers to work on advanced process control and automation systems for a wide range of industrial applications. The company develops systems based on PDP11 minis and Motorola micros including their own operating systems software. Real time experience in comms., data acquisition or military systems useful. Excellent benefits.
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Programmers Pascal/Ass't

Berks. to £10,000

Our client is a very well known manufacturer and market leader in word/information and data processing systems. Programmers with 2-3 years experience are required to work on the development of systems and application software. Assembler and/or Pascal experience is essential and a good working knowledge of communication oriented systems is desirable.
Contact Tim Bridges.

Open letter to technical and commercial job seekers at all levels:

We are here to help you. Our free service to you is advice and counsel in identifying the most suitable position for the development of your career. Our consultants have held senior positions in the computer industry. They have the experience to understand your needs. If we do not have the position you want, we are prepared to help you find it. Why not accept this invitation to talk over your ideas with us?

Write or telephone (02403) 28383 during office hours -
we are always ready to discuss these and many other interesting positions.
Evenings and weekends only: Terry Harvey - Great Missenden (02406) 4705 Tim Bridges - The Lee (024) 020 502

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Hill House, Hill Avenue, Amersham, Bucks. HP6 5BQ. Tel: 02403 28383
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IBM, COBOL, CICS & DL1
IBM PL1 Various requirements
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IBM SYSTEM 34, RPG 11 & DMS or
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IBM COBOL, CICS & QPAC
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IBM IMS DB/DC, ADF TEAM
LEADERS/SYSTEMS DESIGNERS
IBM CMS COBOL
IBM CICS, VTAM, COBOL/ASSEMBLER
IBM MARK IV
IBM UFO Expertise
IBM PL1, SHADOW
IBM System Programmers
IBM MVS COBOL SHADOW IDMS
IBM Assembler on-line DATABASE &
TASK MASTER
IBM SYSTEM 38 RPG 111
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expertise
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ICL ME29 COBOL
ICL Range COBOL
ICL SYSTEM 10 ASSEMBLER
ICL SYSTEM 25 ASSEMBLER
PDP RSTS/E BASIC + or BASIC + 2 some
with DATABOSS
PDP RSX11M BASIC + 2
VAX SYSTEL
VAX COBOL
HP3000 COBOL
WANG COBOL or BASIC

PASCAL PROGRAMMERS
TANDEM any levels (URGENT)
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INTEL 8086 ASSEMBLER
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SOME WITH IDMS or
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40 REQUIREMENTS
ASAP

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Bahrain to £15K Tax Free + accommoda-
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HP3000 COBOL PROGRAMMERS or
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Excellent salaries plus relocation pack-
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Salary to £15K plus comprehensive relo-
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contact Peter Jazepph or Bill Evans on
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ing a detailed C.V.

Systems Designers

c £12000

We require Systems Designers to work on the
specification design and implementation of
large on-line transaction processing systems
based on Tandem equipment. These are
resilient, non stop developments. Applicants
should have at least 4 years experience,
with a minimum of 2 years spent in a design
role. Preference will be given to candidates
who are well qualified in the field of interactive
systems development.

Software Engineers

c £12000

These appointments are for Software Support
Staff who provide Tandem system expertise to
clients, including performance analysis, system
tuning, capacity planning and the development
of operational procedures. Some pre-sales
support involvement can be anticipated.
Previous experience should include at least
4 years in a systems environment preferably in
the area of software support. Knowledge of
interactive database applications or com-
munications systems is desirable.

Cobol Programmers

c £10 000

Our programmers provide program design
and development experience to a wide
variety of clients. These positions involve the
development of on-line applications in the
Tandem non stop environment. A minimum
of 2 years experience of application
development in COBOL is required. Familiarity
with interactive database systems and/or
banking and financial systems would be a
distinct advantage.

Most appointments involve travel to client sites which are generally in the City, although flexibility to work throughout
the UK and the US will be an important consideration. All salaries are negotiable as the Company is prepared to pro-
vide remuneration in line with ability and experience. Full training on Tandem Systems will be provided and there will
be opportunities to work in other areas of this rapidly expanding Company.

To discuss your future career with Applied Communications, telephone Alan Moxon or Chris Peat on 01-423 2131.
During out of office hours (evenings or weekends) telephone Alan Moxon Whipsnade (0582) 873106 or
Chris Peat Walton-on-Thames (09322) 22644 or write to

Manager, Customer Services, Applied Communications Ltd.,
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For a Sales Executive who can achieve sales to
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All positions offer a variety of work and attractive career prospects in an expanding
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In our new London office based at 35 Piccadilly
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about the career opportunities which we can
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seeking Analysts, COBOL programmers, Systems
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WEST END
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If you have 2 years COBOL, are a graduate and
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exciting environment would interest you.

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HONEYWELL SITE to £10K.
Analysis and COBOL programmers with
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CITY
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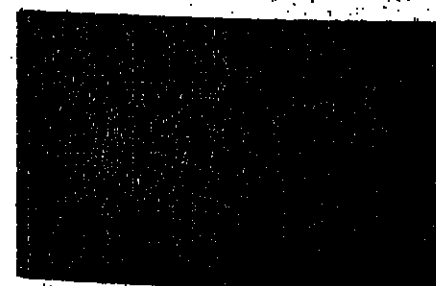
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Principal Consultant/Designer £ Negotiable
Senior Team Leaders/Consultants to £15,000

Senior Programmers to £12,000
Programmers to £9,000

Our client is embarking on the development of one of the largest multiple node networks of computer communications systems in Europe. Being a large, successful manufacturing company they have the facilities and credibility to handle a project of this size. Early study and planning phases are initiated but the main design and implementation teams will be newly recruited.

Principal Consultant/Designer The candidate for this position will probably be a national figure. You will have considerable experience and knowledge of communications and networking at a state-of-the-art level and be capable of representing the company at international meetings.

Senior Team Leaders/Consultants will have several years systems software implementation experience, typically at operating systems level on minis and micros. They are expected to have a good appreciation of hardware architecture. Experience of communications systems would be advantageous.

Senior Programmers & Programmers will have two or more years experience of systems software implementation or technical applications development on minis or micros. Essentially they will be bright people who will be attracted by the scope and challenge offered by a project of this magnitude.

Usual successful company benefits including relocation assistance where appropriate.

Apply in confidence to Terry Harvey by sending personal and career details, or contact him for an application form, evenings 61. Missenden (02416) 4705 or daytime as below.

HR

H. R. Associates Limited

Consulting and Recruitment Specialists
Hill House, Hill Avenue, Amesbury, Wiltshire SP6 5BE Tel: 0241 23633

HR

EXCELLENT CONTRACTING OPPORTUNITIES

Our immediate domestic and international consulting needs are detailed below. If you are of a professional disposition, skilled and dedicated, and wish to join our growing permanent or contract staff, please contact us in respect of these and future opportunities.

INTERNATIONAL

RPGII, IBM S/34
MSA, General Ledger
experience
COBOL, DGS, IBM 4331
COBOL, IMS, CICS
Foreign Exchange
experience

Analyst/Programmer
Analyst
Programmer/Analysts
Systems Analyst,
Programmer/Analysts

Africa
USA
USA
USA

UK
COBOL, IMS/DB
and/or DC
HP3080

Prime
PL/1
IBM S/38 or
S/34
Burroughs 6800,
COBOL
MUMPS, PDP 11
COBOL, CICS, DL/1
Rediffon R850
Experience of
interactive systems

Designers,
Programmer/Analysts
Designer/Analysts,
Programmers
Analyst/Programmers
Analyst/Programmers

Analyst/Programmer;
Programmer
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All levels
Senior Analyst
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Aberdeen

For more information please contact:



Resources Department
TANGENT COMPUTER SERVICES
102/100 South Street
Romford, Essex.

Tel: Romford (0706) 750201
(24 hour answering service)

QUEEN ELIZABETH COLLEGE
Kensington
(University of London)

ADVISORY PROGRAMMER

Applications are invited from graduates for this post in the Computer Unit, the Advisory Programmer services. Both staff and students are eligible to apply. The main service is provided by a local Digital VAX 11/780 and by the University of London Computer Centre (CC/C/Amend/1/Cray). Much use is also made of microcomputers. Main languages are FORTRAN and BASIC. Knowledge of PASCAL and ALGOL-68 would be useful. Initial appointment will be in Grade 1B or on the first four points of Grade 1A (currently £5,952-£7,200) depending on qualifications and experience. London allowance of £1,036 in addition. Appointment is required as soon as possible though the possibility of appointing a person starting this summer is not excluded.

Further details and application form from College Secretary, Queen Elizabeth College, Campden Hill Road, Kensington, London, W8 4AL. Tel: 01-837 5411 ext. 205. (0870)

SOUTH COAST

If you want to know what vacancies are currently available in all Southern Counties ring
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CBS APPOINTMENTS
Toursouth (0202) 292155 (Office)
or 0202 854381 (Cass & Wines)
Age. (0821)

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COMMUNICATIONS PROCESS CONTROL VIEWDATA

Modular Computer Services has been extremely successful in supplying high performance, highly reliable computer systems to the above marketplaces.

Our Marketing Division provides our sales force with comprehensive technical support and we are now seeking the following key individual who will assist us in maintaining our current high level of achievement.

Technical Marketing Analyst c. £11,500 on goals and Company Car

This is a demanding pre-sales role which will involve the successful candidate in giving presentations, running benchmarks, configuring systems and providing technical solutions to customer problems. Ideally we are looking for an individual with these skills but we would be willing to train an applicant with a suitable software background. A programmer with drive and an outgoing personality looking for a move into a sales environment would find this an excellent career opportunity.

Other attractive Company benefits are a non-contributory pension scheme, free life assurance and free B.U.F.A.

For further details and SUB HAMPSON on
WOKINGHAM 768711 or write to MODCOMP
MOLLY MILLARS LANE, WOKINGHAM, BERKSHIRE

MODCOMP

Mature Senior Analysts

Business Analysis/Project Leadership

Central Herts Five Figure Salary

(Relocation Assistance Available)

Substantial database and on-line systems development plans have created the need to recruit two systems professionals to augment an expanding project team environment.

As Project Leader or senior member of the team, you will be afforded total project involvement assuming responsibility for the investigation, proposal, justification, specification, development and implementation of systems to meet our user requirements.

We would expect that candidates possess a sound data processing background of which probably no less than five years have been spent as a Systems Analyst. Moreover, you should be confident in your ability to liaise effectively with all levels of both user and computing orientated employees.

Our requirement to recruit is immediate: our ability to respond to the execution of current plans is vital - your experience could provide the missing link.

For immediate reaction as to your suitability, contact Andrew Carter and Rex Ashcroft on 01-935 0671 (24-hour answering service) or submit a detailed curriculum vitae to the London office.

Technical, Sales & Management Appointments

Specialist Computer Recruitment Ltd

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James House, 46 James Street
London W1M 5HS
01-935 0671/488 0481

MIDLANDS & INTERNATIONAL
35-37 Great Charles Street
Queensway, Birmingham B3 3JY
021-236 3781

NORTH
Blackfriars House, The Paragon
Manchester M3 2JA
061-833 0427

BELGIUM
Avenue Louise 327
Dote 4, 1050 Bruxelles
010 322-640 7161/71

HOLLAND
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010 3120-760947

MANAGEMENT INFORMATION SYSTEMS MANAGER

Salary negotiable in the range £12.5 to £14.5K
Company car provided plus excellent benefits package

Based: West London
Environment: IBM 4331, DOS/VSE, CICS, DL1, COBOL

We have been retained by our client to recruit a Manager who will assist them in the ongoing development and running of their Data Processing facilities.

The job will involve the following duties:

- ★ Project management and control.
- ★ Appraisal of packaged applications software.
- ★ Technical involvement in the operations sphere.
- ★ General budgeting, administration and man management of a small DP Department.

The position will necessitate travel to both the USA and the Far East from time to time.

Ideally candidates should have a good technical knowledge of IBM equipment and the ability to liaise successfully with all levels of management.

For further detailed information concerning this position please contact Chris Morrow on 01-837 0451 or alternatively send your C.V. to the address below for consideration. Please quote reference number RC10.



TOTAL SELECTION LIMITED
388 City Road, London EC1V 2QA

01-837 0451

(9827)

SYSTEMS TECHNICAL MANAGER

Good Project Leading and ICL experience

From £10,000 per annum to £15,000 per annum

Our client, a major distribution company, part of a multi-national organisation, wish to appoint a computer professional to the position of Systems Technical Manager.

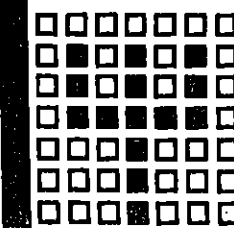
The Position
Reporting to the Data Processing Manager, the successful candidate will be responsible for control of the development team, and provision of Systems and Programming services within the Company.

The Requirement
Applicants will essentially be considered for their proven project management experience and leadership qualities. Strong COBOL programming background is vital and preference will be given for previous ICL experience (ideally VME) and a distribution background.

The Opportunity
An ideal opportunity for a Project Leader to move up the management ladder and grow with a rapidly expanding and dynamic company.

The Contact
For more detailed information and an immediate interview - telephone Peter Jephson on Camberley (0276) 84262 during working hours, or evenings and weekends on Guildford 76511.

Alternatively, write enclosing a detailed C.V.



TRIDENT COMPUTER SERVICES PLC
Trident Computer Services PLC,
The Parade, High Street,
Frimley, Surrey.

(9828)

We need...

Team Leaders-£11.5k, Analyst-Programmers-£10.5k, and Programmers-£8.5k.

Our client is a household name company manufacturing consumer durable products for the UK and European markets. They are part of a major British industrial group, and in their thirty years of existence have become market leaders in their industry.

They are on the point of moving their computer department to brand new accommodation at their factory in South Hertfordshire. The current installation is an ICL 2960 running under DME 2 with programming in Range Cobol. Programming is all on-line using Mimmac, and other software includes TPS Access, MTS enquiry and Prospect financial modelling package.

Planned developments at the new site include upgrading the current hardware, the implementation of a major manufacturing and production control package and the introduction of a micro/mini based stand-alone spare parts inventory system.

The planned move will take place within the next two months and to coincide with the installation of the computer at the new site, our clients urgently need to recruit six people in the following positions:

- 2 Team Leaders, with at least five years in DP and experience of analysis and programming in a similar technical environment
- 2 Analyst/Programmers, with at least 3 years in DP and sound ICL 1900/2900 DME Cobol
- 2 Programmers, with at least 18 months ICL 1900/2900 DME Cobol

All these positions are a permanent package with excellent salary and benefits, company car, pension, and a profit sharing scheme and a private health insurance scheme.

These positions are to be filled as soon as possible and successful applicants will commence work at the new site at the beginning of August. Initial interviews will be held in central London, so if you want to be part of a new team, contact Bob Burnett on 01-835 8411 (office to 5.00 p.m.) or 01-837 0451 (w/ends) or all in and retain the interview.

Computer People London

..to build our team

Post to: FREEMAN, Computer People London, VLI House, St. Martin Lane, London WC2N 4TE

Name: _____

Address: _____

Tel. (Home): _____

Computer People London

COMPUTER SCIENTIST

The European Molecular Biology Laboratory, a research institute founded by 10 member states and situated in Heidelberg, Germany, invites applications for a position at the EMBL Outstation at the Deutsches Elektronen-Synchrotron (DESY) in Hamburg as

The successful candidate will provide software and hardware computer support for scientists engaged in research activities in structural biology using X-ray synchrotron radiation from the DORIS storage ring. The support includes:

- maintenance of systems software for PDP 11/45 and PDP 11/24 running under RSX 11/M
- maintenance and development of CAMAC data acquisition systems
- maintenance and improvement of software packages for the analysis of data
- design and implementation of extensions to these systems
- installation and maintenance of systems software for a VAX 11/760 with VMS systems and linking to existing machines.

The successful candidate should have appropriate qualifications and substantial experience in design and implementation of extensions to the above systems as well as maintenance and improvement of software packages for the analysis of data.

The net salary offered will be above average, in addition to which certain allowances such as family allowance, children and non-resident allowances are payable, depending on personal circumstances.

Please write briefly for an application form, quoting reference No. 82/8 to: EMBL, Personnel Section, Postfach 10 22 09, D-6800 Heidelberg.

9829

PROGRAMMER

Walton Container Terminal require a PROGRAMMER/RELIEF OPERATOR. The main functions of the post would be:-

- (a) To write program modifications and assist in the writing of new program routines.
- (b) To relieve Computer Operators when they are sick or on leave.
- (c) To assist in the administration of computer information.

The system is a medium-sized "Datapoint ARC" running under D.O.S. and Datasware. Preference will therefore be given to applicants with Datapoint programming experience. Salary negotiable according to experience.



Write for an application form to - Mrs Beryl Tranter, Secretary to Managing Director, Walton Container Terminal Limited, The Dock, Rotherham, IP11 8SG.

Closing Date 21.6.82.

THE Comac CONTRACT

UK
NCR IRL TRX COBOL PROGS.
IBM SYSTEM 34 COBOL PROGS.
IBM OS MVS COBOL PROGS.
IBM CICS DLI COBOL PROGS.
IBM SYSTEM 38 RPG3 PROGS.
IBM SYSTEMS ANALYSTS Construction Industry exp. essential.

VENTEK DATAPoint ARC DATABUS HP3000
IMAGE COBOL PROGS & DESIGNERS
PDP VAX CORAL 66 PROGS.
TANDEM T16 PROG. ANALYSTS.

SAUDI ARABIA
IBM, PLI, JCL & IBM Utilities COBOL exp. secondary.
TSO/SPF, IMS DB/DC an advantage \$800 p.w. TAX FREE.
NCR PROGS. & PROG./ANALYSTS. All levels to work on 2-year contract in Riyadh & Jeddah.

OVERSEAS
IBM SERIES 1 PROGRAMMER ANALYST PARIS.
UNIVAC 77 PROGS. HOLLAND.
ICL 1900/2956 G3 COBOL PROGRAMMER ANALYST STOCKHOLM.

For further information on the above vacancies also Overseas vacancies please contact Mike or Elizabeth

We have a reputation for moving quickly and efficiently so for an informal chat telephone us today or send your c.v. as soon as possible.



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24 HOUR
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TELEPHONE

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£12k - £14k p.a.

At the Royal Borough of Kensington and Chelsea we have a lively and professional D.P. department.

In addition to the financial systems found in any large organisation we have a variety of interesting work in areas such as housing, engineering and social services.

A very high standard of work is expected from all our staff who follow a structured methodology for project development.

An IBM 4341 is in use with DOS/VSE and VM. So far, seventy terminals are attached.

All current projects involve on-line development using COBOL and CICS. APL and other personal computing facilities are being introduced and will run alongside our more major developments.

We are seeking a project manager for one of our three development teams, whose duties will include - planning and organising work of a 5-member team through all stages of project development - undertaking major tasks within the feasibility, analysis and implementation stages

He or she should have seven years' D.P. experience and be able to demonstrate the ability to perform the above tasks.

In return, we offer a friendly working atmosphere in pleasant modern offices off Kensington High Street, excellent training facilities, generous holiday arrangements, flexitime and an active sports and social club.

For further details ring Tony Eldred on 01-937 5484 ext 862.

The Royal Borough of KENSINGTON AND CHELSEA

Application forms are obtainable by postcard only, quoting Ref. CW/840, from the Personnel Service, The Town Hall, Hornton Street, London W8 7NX. Closing date for applications 28th June, 1982. Applications are welcome from suitably qualified disabled persons.

(8678)

LIVERPOOL INSTITUTE OF HIGHER EDUCATION

(CHRIST'S AND NOTRE DAME COLLEGE AND ST CATHERINE'S COLLEGE)

Lecturer in Computer Studies

Applications are invited for the position of Lecturer in Computer Studies to teach courses with BA (General) with honours and B.Ed (hons) modular degrees. Topics covered include programming language structures, Computer Architecture, Information Systems and Design, Software Design and Development and Digital Electronics.

Applicants should have a degree in a subject containing Computing as a major component and/or recent industrial or commercial experience. Salary on Lecturer II/ Senior Lecturer Burnham scale £8,462-£12,141 (under review).

Further details about the post are available from the Rector, Liverpool Institute of Higher Education, Stand Park Road, Liverpool L16 8JD, to whom letter of application should be submitted by 28th June 1982.

(8675)

OEM SALES

disk drives/magnetic media

c £13,000 basic+bonus+2.3 Rover

This major Japanese manufacturer needs an impressive technical sales professional to further consolidate its start-up phase. High-level, high-value contract negotiating with major OEM's is involved.

This new position offers considerable scope for initiative in selling Winchester and state-of-the-art disk technology.

Excellent career prospects, high basic salary plus bonus, prestige car, 23 days' holiday.

Please contact Ivor Harland on Windsor (07635) 56155 or write to Kramer Westfield Associates Ltd., 31 Peasod Street, Windsor, Berkshire, SL4 1BA.

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SMR

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That's Sales and Marketing Recruiters, the industry's leading sales recruitment specialists. Just ask any computer manufacturer!

Contact Alexander Scott or Peter Hubble (01-734 9776), Roger Pyatt (061-445 0646), or Alan Williams (05432 56812).

(8664)

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29 Oldland Street, London WC1A 9EJ

Telephone: 01-734 9776

MIDLANDS & NORTH

55 Dale Street, Liverpool L1 5DA

Telephone: 051-224 1112

Advertising Space after 10.00am on 10th June 1982

Systems Analyst

Clarks Limited is the largest manufacturer of branded shoes in the U.K.

To give further impetus to the development of a range of new commercial systems, we are now looking for another Systems Analyst.

The successful applicant will work in a progressive IBM installation and will have a record of achievements in the areas of system development and implementation. Experience of order handling routines and/or warehousing procedures would be an advantage.

We offer a starting salary of around £10,000 p.a., together with an annual bonus and non-contributory pension scheme. A full relocation package is available to enable you to move house to this very attractive part of Somerset.

Please write to John Hokkaway, Staff Services Manager, Box 112, Clarks Limited, Street, Somerset for an application form or phone Street (0458) 43131, ext 3461.

Clarks

(8682)

COMPUTER AUDITOR

POI (3-7) £10,011-£11,084 Incl.

We are seeking to appoint either an experienced systems analyst/programmer with an appreciation of the role of internal audit in a large local authority, or a qualified accountant with at least three years' relevant experience in the audit of computer systems and operations.

Croydon's computer development programme is being constructed around a Honeywell Level 68 (operating under GCOS 4.183) together with a number of mini-computers. The Authority has recently installed a financial information package (GL+) and this will be significantly developed over the next few years. Other major financial and management systems are also planned (DLO for example) with the creation of a terminal network.

The post is located within an Internal Audit Section of 15. The postholder will be expected to be highly self-motivated and to make a positive contribution to the development of the computer audit function in Croydon.

CROYDON

For an informal discussion, contact Lynne Yardley on 01-688 4433 Ext. 2140

Applications in writing to: Director of Finance, Municipal Offices, Felt Road, Croydon, Surrey CR9 1BD.

(8686)

ANALYST/PROGRAMMER

The company has a 256 Mb IBM System 34, and over the next two years is planning to install several new pieces of equipment including a large System 38 next year.

The management services department now requires an additional ANALYST/PROGRAMMER to join the small but highly productive development team. The applicant will ideally have proven ability in RPG on System 34 and preferably System 38. Although training will be provided where necessary COBOL expertise would be an added advantage.

Salary £8,200 p.a.

Good Canteen and Welfare Facilities

Please send C.V. to:

John Drucker,
Bally Shoe Company Ltd.,
Hall Road,
Norwich, NR4 6DP

SALES BIT

Quality of management - 13

The recipe for successful sales training

AS I mentioned last week, training salespeople is not easy. They are demanding students - their enthusiasm can contribute to raising the success of a course beyond the expectation of the trainer, or can equally destroy any chances of real achievement if their interest is not stimulated and their respect earned.

The recipe for achieving a successful sales training course is not simply a matter of choosing the right topic. Equal attention must be given to other aspects of the educational process. The trainer must be:

- Fluent in his presentation. There is nothing less convincing than a hesitant trainer.
- Able to deal effectively with side-issues that may be generated by the main topic. Students expect their tutor to be well-informed on the art in general as well as the subject in hand.
- Well-provided with supporting information. "I don't know" does very little for the trainer's personal credibility.

Supported by professionally produced visual aids. Tatty, freehand flip-chart illustrations reduce the impact and credibility of both the trainer and the subject matter and do nothing to raise the presentational standards of the students.

Professional in his attitude and delivery. Being well-informed is not all. Tutorial impact must be at least as good as might be expected of a first-class sales presentation and the importance of every topic must be stressed. If this cannot be done with absolute conviction either the trainer has got it wrong or the subject should be omitted altogether.

Aware of the need for providing students with good food and accommodation as well as a potentially stimulating social environment. If students are unhappy with their surroundings this usually has an adverse effect on their attitude towards study.

In tune with the needs of individual students as well as the class as a whole. Most salespeople are reluctant to give up precious selling time, but to do so for a tutorial that teaches them nothing is aggravating, to say the least of it. Individual student profiles can often be a great assistance in optimising the effect of training.

There are many reasons why sales organisations never get around to providing sales training, though most can be interpreted as little more than excuses. In many cases the cause is little

PUZZLE ANSWER

THE important thing here is to select simple terms in which to formulate the equation. One easy way is to assume that Unit of Time = time taken for one step to move out of sight at the base of the escalator, with a number of steps showing. We can then say that the first trip involves: (A) 30 steps in 30 units, and the second trip 75 steps in 75 units. This comes down to: (A) 1 step in

more than lack of success.

Company size has no relevance to the justification of training by internal means. Whether the team is a handful or a load, every sales manager must have the capability to commit to task, people basic selling and provide the wherewithal to revitalise specific techniques.

The strength of reduced training in that external organisations are as aware as yourself of the ramifications of your product in your market against your competitors.

Putting someone on generalised "Bank's Training" course is apparently covers a wide variety of industries, a multitude of commodities seldom give any meaningful benefit to the student's employer.

Specialised courses specific selling techniques those which are dedicated to a particular industry or commodity are a different matter.

Of course, fluency in subject does not necessarily imply an ability to teach: other people, and who comes to presenting substantial training courses as opposed to a specific lesson, the demands are beyond the capability of experience of the typical sales manager.

Unless he lives within the luxury of a major corporation with its own training facilities, his real alternative is to consider the use of an external training organisation.

The role of the external trainer must be to provide education that is consistent to the specific needs of the sales organisation. This is probably best achieved by providing product and applications tuition from internal sources, while the external trainers to provide selling the structure of the course and controlling its management.

Cost justification of training is not possible in finite terms.

It is likely that a training company providing a bespoke course will still use some standard training modules in order to minimise costs. Nonetheless, it is a reasonable rule of thumb to expect that the time taken to prepare a customised training course will be of equal duration to its actual presentation.

Next week I shall be writing about some of the day-to-day hazards of running a sales training course.

Alan Williams

Units, and (B) 1 step in 75 units. Now, since one step in 30 units is the same time as one step in 75 units, we can say that the first trip involves: (A) 30 steps in 30 units, and the second trip 75 steps in 75 units. This comes down to: (A) 1 step in

Programming Plus in the City

An opportunity for career minded programmers to enhance their skills within the development of an interesting range of in-house accounting and management information systems with one of the world's largest Financial Services firms.

Our Client offers two determined young programming professionals the opportunity to play a significant role within the development of new mini-computer based on-line systems at their London Headquarters.

These systems will support a professional staff who provide a wide range of accounting and data processing services to a prestige client base throughout the United Kingdom.

Candidates should possess an absolute minimum of two years COBOL programming experience preferably gained in a mini-computer environment, where exposure to on-line techniques and technical professionalism will have enhanced and consolidated their programming skills. A sound academic background would be desirable, although not essential, and the individual should have had experience of working closely with users during the development and implementation of accounting and management reporting systems.

The benefits the individual will gain by working for an internationally respected organisation are obvious, and successful candidates can expect remuneration and other advantages appropriate to such an opportunity.

To arrange an initial interview, please call Rex Ashcroft on 01-935-0671 during working hours, or Harlow (0279) 416529 evenings and weekends.

Salaries Negotiable to £9,000

Technical Sales & Management Appointments

Area	Address	Telephone
SOUTH	James House, 46, James Street, London W1M 6BS	01-935 0671/486 0461
MIDLANDS & INTERNATIONAL	35-37 Great Charles Street, Queensway, Birmingham B3 3JY	021-335 3781
NORTH	Blackburn House, 120 Parkgate, Manchester M3 2JA	061-833 0427
BELGIUM	Avenue Louise 327, Bule 4, 1054 Brussels	010 322-640 7151/71
HOLLAND	Willemsparkweg 112, 1071 HM Amsterdam	010 3120-760947

Specialist Computer Recruitment Ltd



If you want to know why we've just created 15 new Programmer jobs, Speak to the people who know.

Our Programming Section Managers are the people responsible - and they'll be talking to you directly when you phone Burroughs to hear the why and the wherefore of our 15 new appointments for Senior Programmers and Programmers. You'll hear how the appointments have been created, as a result of our expansion plans. Why we need to take these people on board in the next six months to meet the demands of a rapidly increasing market share. How you can invest - and broaden your software expertise by joining a project team initially in one of these areas (but with exposure to other specialities as part of your career development with us):

- Operating Systems * Interpreters
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In turn, you'll have the chance to ask all the technical questions you want about our innovative and sophisticated computer systems, terminals and automated banking equipment and to get all the facts straight from the people who know. We'll also be pleased to give you details on salary, benefits and overseas travel opportunities: trips to the U.S.A.; home of our parent company; are a definite possibility.

Let's talk. The number is 01-686-0355. Ring us on Tuesday, 15th June or Wednesday, 16th June between 5.00pm and 9.00pm. Alternatively, if you are unable to telephone on either day, please write to: Personnel Department, Burroughs Machines Limited, 312 Finsley Way, Croydon, Surrey, CR9 4NZ.

CONTRACTS

We urgently require skilled and experienced analysts and programmers. Below are examples of contracts starting shortly. If you are on contract or are seriously considering taking up contract work why not contact JACKIE ROBBINS now and find out about the many services Force 8 offer to their contractors, including FREE Tax Advice.

LONDON & SOUTH

*IBM	Analyst	- Insurance
	Analyst/Programmer	- CICS, PL1, IMS
	Programmer	- COBOL, CICS (Command)
*HP3000	Programmer	- COBOL
*DATA GENERAL	Programmer	- COBOL, AOS/VS, INFOS2
*B8800 & 6800	Programmer	- COBOL, DMS2, PCS+, DIS

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